

PRQ-PCB-ICB-F

PAGE 1 OF 11

COLUMN WRITE ®

			1	2	3	4
1	U 1	TMS 4045-30NL (2114-3)	22			
2	U 2	TMS 4045-30NL (2114-3)	22			
3	U 3	2532(25L32) ^(28 PIN SOCKET)	22			
4	U 4	2532(25L32) ^(28 PIN SOCKET)	22			
5	U 5	MK3880N Z80 CPU (40 PIN SOCKET)	21			
6	U 6	MPD765C (40 PIN SOCKET)	31			
7	U 7	7438	31			
8	U 8	NE527	10		NET OPT	
9	U 9	AM 27\$29	16		NET OPT	
10	U 10	AM 27\$29	16		NET OPT	
11	U 11	AM 27\$29	16		NET OPT	
12	U 12	74L\$138	22			
13	U 13	74L\$74	25			
14	U 14	74L\$74	24, 31			
15	U 15	74L\$244	21, 28			
16	U 16	74L\$240	19, 31			
17	U 17	74L\$240	31			
18	U 18	74L\$175	31			
19	U 19	74L\$153	31			
20	U 20	7438	31			
21	U 21	7406	10, 25			
22	U 22	74L\$273	16		NET OPT	
23	U 23	74L\$374	16		NET OPT	
24	U 24	74L\$374	16		NET OPT	
25	U 25	74L\$82	24, 29			
26	U 26	74L\$08	23, 24, 25			
27	U 27	74L\$175	28			
28	U 28	74L\$125	21, 28, 29			
29	U 29	74L\$02	21, 24, 25			
30	U 30	MK3880N(Z80 DMA)(40 PIN SOCKET)	21			
31	U 31					
32	U 32	74L\$161	31			
33	U 33	HEADER	21, 25, 31	(SEE PRQ-HA-0573-B)		
34	U 34	74L\$32 (7427)	23			
35	U 35					
36	U 36	74L\$02	6, 24, 39			
37	U 37	74\$51	31			
38	U 38	74L\$36	10, 11		NET OPT	
39	U 39	74L\$138	23			
40	U 40	74L\$132	23			

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		(PINS) #	1	2	3	4
1	U41	898-1-R10K (4116-002-103) DIP				
2	U42	75189 (1489)	25			
3	U43	75189 (1489)	25			
4	U44	74L\$157	31			
5	U45	75115	1			
6	U46	74\$112	6			
7	U47	74\$112	6			
8	U48					
9	U49					
10	U50	DM 85\$68N	39			
11	U51	74L\$74	34			
12	U52	74L\$164	34			
13	U53	74L\$169	13			
14	U54	74\$225	14			
15	U55	AM 25L\$2521	13			
16	U56	74L\$164	13			
17	U57	74L\$74	4,30			
18	U58	74\$225	2			
19	U59	74\$240	2,3,24,25,29			
20	U60	74L\$74	6,29			
21	U61	74L\$74	36			
22	U62	74L\$74	36			
23	U63	74L\$175	35			
24	U64	74\$08	35,36			
25	U65	74L\$164	34			
26	U66	74L\$20	34			
27	U67	SPARE				
28	U68	74L\$166	13			
29	U69	74L\$169	13			
30	U70	9401	13			
31	U71	MC 3417	20			
32	U72	74L\$00	3,21,30,31			
33	U73	MK 3882 28φ CTC (28 PIN SOCKET)	25			
34	U74	MK 3884 28φ 51φ (40 PIN SOCKET)	25			
35	U75					
36	U76	75114	1			
37	U77	74L\$27 (7427)	3,6			
38	U78	74L\$153	3			
39	U79	74L\$08	1,5			
40	U80	74L\$74	6			

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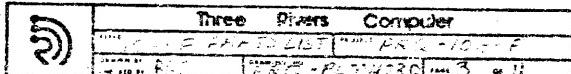
PRQ-PCB-IOB-F

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COLUMN WRITE @

			1	2	3	4
1	U81	74 \$374	2			
2	U82	74L\$74	36			
3	U83	74L\$148	35			
4	U84	74\$153	34			
5	U85	74L\$139	34			
6	U86	74L\$00	34			
7	U87	74L\$153	13		NET OPT	
8	U88	74L\$151	17		NET OPT	
9	U89	74L\$10	26, 29			
10	U90	74L\$153	1			
11	U91	9401	1			
12	U92	74\$04	3, 4, 6			
13	U93	9406	3			
14	U94	9406	3			
15	U95	74L\$00	35			
16	U96	74L\$74	35			
17	U97	74L\$04	34			
18	U98	74L\$74	14, 15		NET OPT	
19	U99	74L\$08	10, 12, 13		NET OPT	
20	U100	74\$10	2, 4			
21	U101	74L\$161	15		NET OPT	
22	U102	74L\$74	17		NET OPT	
23	U103	74L\$374	28			
24	U104	9708	26			
25	U105	74L\$374	26			
26	U106	74L\$374	29			
27	U107	74L\$374	27			
28	U108	74L\$374	30			
29	U109	74L\$374	30			
30	U110	74L\$374	6			
31	U111	7406	6, 21, 31			
32	U112	74L\$244	1			
33	U113	74\$139	3, 4			
34	U114	HMI-7649-B5546 (AM 27\$29)	3			
35	U115	HMI-7649-B5546 (AM 27\$29)	3			
36	U116	HMI-7649-B5546 (AM 27\$29)	3			
37	U117	74L\$139	35			
38	U118	74L\$74	35			
39	U119					
40	U120	SPARE				

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PRQ - PCB - IOB - F

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COLUMN WRITE @

			1	2	3	4
1	U121	74L\$157	13,15			
2	U122	74\$00	11,18			
3	U123	74L\$151	27			
4	U124	75188 (1488)	25			
5	U125	74L\$04	23,27			
6	U126	82\$129 (82\$131) (16 PIN SOCKET) (174\$287)	29			
7	U127	9914 (40 PIN SOCKET)	27			
8	U128	74L\$14	1,7			
9	U129	74L\$244	7			
10	U130	74\$157	1			
11	U131	74L\$174	7			
12	U132	74L\$374	4			
13	U133	74L\$273	2			
14	U134	SPARE				
15	U135	74L\$283	3			
16	U136	74\$08	34			
17	U137	74L\$74	15		NET OPT	
18	U138	74L\$04	11,12,15,30			
19	U139	74L\$221	11,25			
20	U140	74L\$74	11		NET OPT	
21	U141	74L\$08	12,15			
22	U142	SPARE				
23	U143	SPARE				
24	U144	CD 4051	26			
25	U145	74L\$74	29			
26	U146	74L\$04	11,12,15,18		NET OPT	
27	U147	SPARE				
28	U148	74L\$175	2			
29	U149	7406	1,2			
30	U150	74L\$08	4,6			
31	U151	SPARE				
32	U152	74\$00	36,37			
33	U153	74\$32	15,31,37,38			
34	U154	74\$00	31,38			
35	U155	74\$32	3,12,15			
36	U156	74\$86	12			
37	U157	74\$74	11		NET OPT	
38	U158	AM261D2 (96\$02)	11		NET OPT	
39	U159	74L\$32	18		NET OPT	
40	U160	74L\$27	15,18		NET OPT	

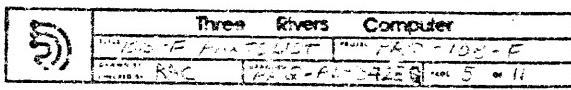
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COLUMN WRITE @

			1	2	3	4
1	U161	74\$32	3,13,15,17			
2	U162	74L\$273	15			
3	U163	74\$112	12		NET OPT	
4	U164	9403	18		NET OPT	
5	U165	9403	18		NET OPT	
6	U166	9403	18		NET OPT	
7	U167	9403	18		NET OPT	
8	U168					
9	U169	74\$74	3,28			
10	U170	74\$174	29			
11	U171	74\$138	30			
12	U172	75161	27			
13	U173	HMI-7649-B5546	(AM 27 \$29)	4		
14	U174	74L\$166	4			
15	U175	74L\$670	4			
16	U176	74L\$670	4			
17	U177	74\$233	37			
18	U178	74\$158	37			
19	U179	74\$158	37			
20	U180	74\$189	38			
21	U181	74\$189	38			
22	U182	74\$374	5			
23	U183	74L\$74	12		NET OPT	
24	U184	74L\$21	5			
25	U185	74L\$32 (7427)	5			
26	U186	74L\$374	14		NET OPT	
27	U187	74\$04	4,7,29,39			
28	U188	74L\$244	11,12,14,15,17,29			
29	U189	74\$138	30			
30	U190	75160	27			
31	U191	AM25L\$2521	4			
32	U192	74L\$164	4			
33	U193	74L\$670	4			
34	U194	74L\$670	4			
35	U195	74\$283	37			
36	U196	74\$189	37			
37	U197	74\$189	37			
38	U198	74\$374	37			
39	U199	74\$189	38			
40	U200	74\$374	5			

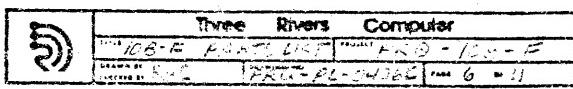
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COLUMN WRITE			1	2	3	4
1	U201	74L\$165	12		NET OPT	
2	U202	9403 (24 PIN SOCKET)	5			
3	U203	9403 (24 PIN SOCKET)	5			
4	U204	9403 (24 PIN SOCKET)	5			
5	U205	9403 (24 PIN SOCKET)	5			
6	U206	SPARE				
7	U207	LM380	20			
8	U208					
9	U209					
10	U210					
11	U211	74\$124	19			
12	U212	74L\$112	↑			
13	U213	MC1741SCPI (LF351)				
14	U214	74L\$161				
15	U215	74L\$157				
16	U216	74L\$221				
17	U217	74L\$221	19			
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COLUMN WRITE @

			1	2	3	4
		(PINS) PAGE #				
1						
2	R1	750-85-R220/330 SIP (764-5-R220/330)	(2,3,4,5,6)7 (7)1			
3	R2	785-1-RIK (4310R-101-102)	SIP	(2,3,4)6 (5)2 (6)1 (7,8,9,10)2		
4	R3	785-1-RIK (4310R-101-102)	SIP	(3)3 (4)1 (5)3 (6)4 (7)31 (8)28		
5	R4	785-1-RIK (4310R-101-102)	SIP	(3)15 (4)14 (5)13 (6)12 (7)11		
6	R5	785-1-R330 (4310R-101-331)	SIP	(2,3)19 (4,5,6,7,8)31		
7	R6					
8	R7	785-1-RIK (4310R-101-102)	SIP	(2)37 (3)36 (4)34 (5)25		
9	R8	20K	11	NET OPT		
10	R9	470Ω	11			
11	R10	470Ω	10			
12	R11	68Ω 1 WATT	10			
13	R12	680Ω	10			
14	R13	130Ω	10			
15	R14	130Ω	10			
16	R15	47Ω	10			
17	R16	220Ω 1/2 WATT	10			
18	R17	220Ω	10			
19	R18	2.2K	10			
20	R19	1K	10			
21	R20	100Ω	10			
22	R21	22K	10			
23	R22	3.3K	10			
24	R23	47Ω	10			
25	R24	1K	10			
26	R25	RN5501002F (10K1%)	10			
27	R26	RN5502001F (2K1%)	10			
28	R27	4.7K	10			
29	R28	100Ω	10			
30	R29	330Ω	10	NET SPT		
31	R30	100K	20			
32	R31	39K	20			
33	R32	4.7K	20			
34	R33	22K	20			
35	R34	12K	20			
36	R35					
37	R36	27K	25			
38	R37					
39	R38					
40	R39					
	R40	10K	23			

Three Rivers Computer

102-2 PART LIST APPX - 102-2

RAC APPX-102-2



COL. 1	COL. 2	COL. 3	COL. 4
1 R41	10K	23	
2 R42	10K	23	
3 R43	10K	23	
4 R44 RN55D1401F	1.40K 1% 26		
5 R45 RN55D1001F	1.00K 1% 26		
6 R46 RN55D1002E	10.00K 1% 26		
7 R47 RN55D2001F	2.00K 1% 26		
8 R48 RN55D3011F	3.01K 1% 26		
9 R49 RN55D2001F	2.00K 1% 26		
10 R50	100K	26	
11 R51	1.5K	11	NET OPT
12 R52	1K	20	
13 R53	10K	20	
14 R54	20Ω	19	
15 R55	30Ω	19	
16 R56			
17 R57	5.1K	19	
18 R58	5.1K	19	
19 R59	13K	19	
20 R60	1K	19	
21 R61	1K	19	
22 R62	9.1K	19	
23 R63	4.7K KLUGE	26	
24 R64	9.1K	19	
25 R65	51Ω	19	
26 R66	100K	19	
27 R67	3.9K	19	
28 R68	100K	19	
29 R69	3.3K	19	
30 R70	100Ω	19	
31 R71	6.2K	19	
32 R72 RC20GF330J (33Ω 2W)	19		
33 R73 - R76 1.2K Ω	see U33		
34 R77 - R79 130Ω	see U33		
35 TRIM 89PR10K	19		
36 C1	5PF	11	NET OPT
C2	.001μF	11	NET OPT
C3	.001μF	11	NET OPT
C4	UK16-103	0.1μF Disk	13
C5	UK16-103	.01μF Disk	10

COLUMN WRITE @



Three Rivers Computer

1013-5 PAG - 108-F

COLUMN WRITE @

1 C 46 202A200225M1 2.2MF 19
 2 C 47 202A200225M1 2.2uF 19
 3 C 48 202A200225M1 2.2uF 19

4 202A200225M1 TOTAL INCLUDING
 5 SILMAN 2.2/20V THOSE ALREADY LISTED 40
 6 CY15C103M CRL.
 .01 CERAMIC CAPS. 63

9 X 1 K11ΦΦA-10MHz CRYSTAL 15 NET OPT
 10 X 2 K11ΦΦA-8.0MHz CRYSTAL 31 (14 PIN SOCKET)
 11 X 3 K11ΦΦA-2.4576MHz CRYSTAL 21 (14 PIN SOCKET)

13 DN 1 IN 4148 10 NET OPT
 14 DN 2 IN 4148 10 ↑

16 D2 1 A2\$810 10
 17 D2 2 A2\$810 10
 18 D2 3 A2\$810 10
 19 D2 4 A2\$810 10

21 Q 1 MPS 6534 10
 22 Q 2 MPS 6534 10 ↓
 23 Q 3 MPS 6531 10 NET OPT
 24 Q 7 AD 580 JH 26
 25 Q 8 78L05ACZ 19
 26 Q 9 79L05ACZ (LM320LZ-5.0) 19

28 L 1 150uH 10 NET OPT
 29 L 2 4.7uH 10 NET OPT
 30 L 3 WEE-56uH(LM320LZ-5.0) 20

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COLUMN WRITE ®

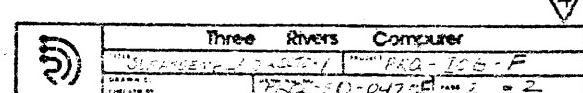
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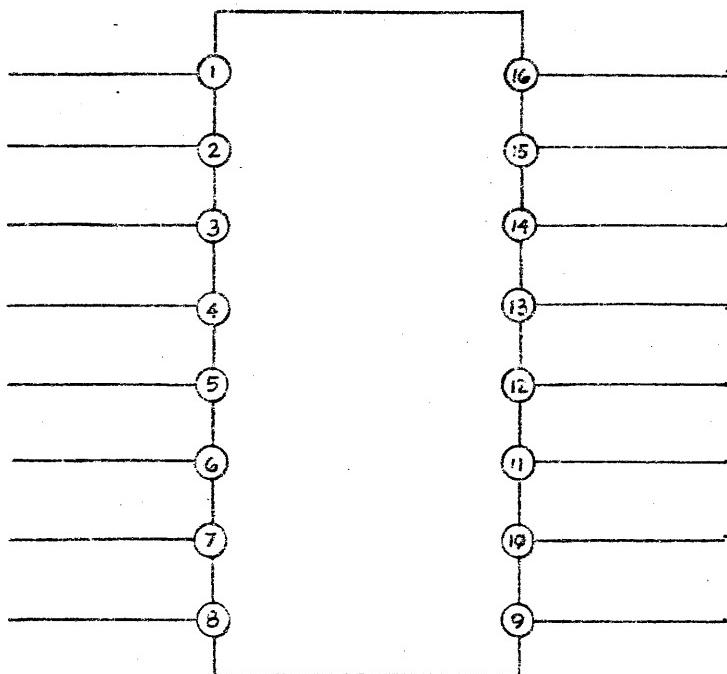
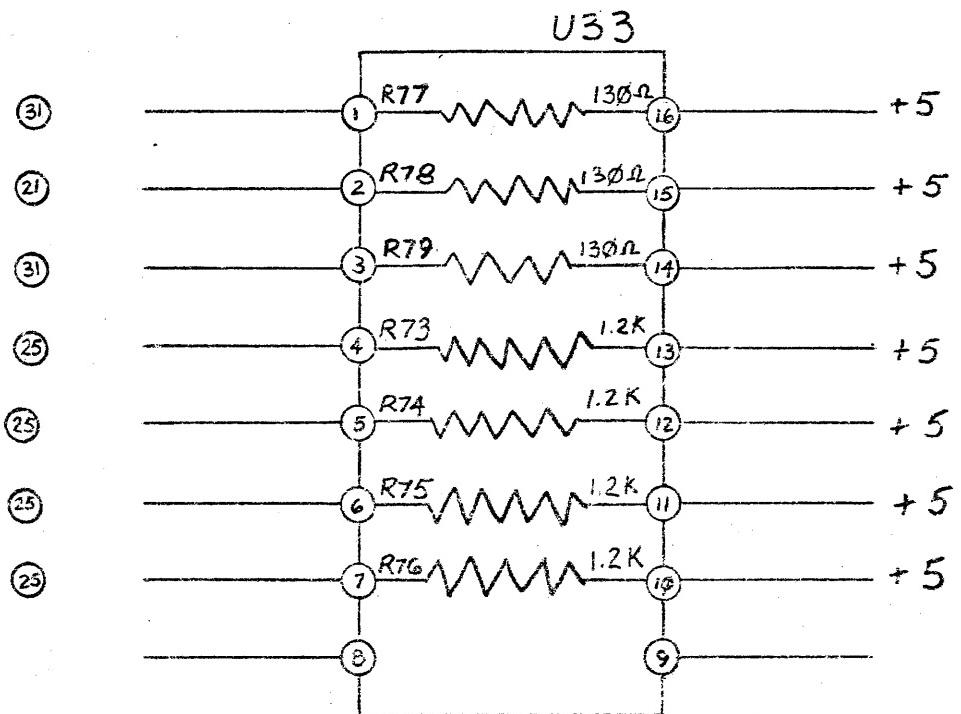


PRQ-PCB-IOB-F
SUBASSEMBLY DIRECTORY

<u>DRAWING NUMBER</u>	<u>DESCRIPTION</u>
PRQ-MD-0230-E	Card Outline
PRQ-PL-0421-E	I/O Parts List
0422-G	"
0423-F	"
0424-D	"
0425-F	"
0426-D	"
0427-C	"
0428-D	"
0429-D	"
0430-E	"
0431-C	"
0432-C	Gate Utilization
0433-B	Gate Utilization
PRQ-SC-0434-B	Table of Contents
0435-C	Disk Data Port
0436-C	Head Select
0437-C	Data Sequencer
0438-D	Header Match
0439-C	Memory Bus Interface
0440-E	Disc Arm Control
0441-C	Disc Status Inputs
0442-B	Rigid Disk Int. Connection
0443-B	Block Diagram
0444-B	Net Analog
0445-C	Data Demodulator
0446-C	Data Modulator
0447-C	Header Match
0448-B	Net Address - Latch
0449-C	Clock Generator
0450-B	Net Einite State Machine
0451-B	Overrun Detector
0452-C	Net Fifos
0453-D	PLL
0454-B	CVSD
PRQ-SC-0455-D	I/O Z80 Layout
0456-B	I/O CPU Memory
0457-C	I/O Peripheral Decoder
0458-D	DMA Channel
0459-D	RS232 Interface
0460-C	Touch Pad Interface
0461-B	GPIB Interface
0462-C	Keyboard Interface
0463-D	Interrupt Vector Select

<u>DRAWING NO.</u>	<u>DESCRIPTION</u>
PRQ-SC-0464-B	I/O Address Decode
0465-F	Floppy Control
0466-B	Floppy Disc Int. Connector
0467-B	Block Diagram
0468-B	Channel Selector
0469-B	" "
0470-C	" "
0471-D	Address Counter
0472-B	High Address Latch
0473-B	Address Count Select
PRQ-SD-0474-E	Subassembly Directory
0475-E	" "
PRQ-SK1-0476-A	PRQ-SK1-I0B-F
PRQ-HA-0573-A	Header Assembly





INPUT OUTPUTGATE UTILIZATION

Page 1 of 2

1,2 -- 3,4

QUAD
74S00 POS. NAND

U122
 1,2 - 3
 4,5 - 6
 9,10 - 8
 12,13 - 11

QUAD
74LS00 POS. NAND

U86
 1,2 - 3
 4,5 - 6
 9,10 - 8
 12-13 - 11

QUAD
74S02 POS. NOR

U36
 2,3 - 1
 5,6 - 4
 8,9 - 10
 11,12 - 13

DUAL DIFF.
DS75114 LINE DRIVERS U76

 5,6,7 - 1,2,3,4
 9,10,11 - 12,13,14,15 1

HEX.
74S04 INV.

U187 U125 U97
 1 - 2 29 27 34
 3 - 4 29 27 34
 5 - 6 34
 8 - 9 39 23 34
 10 - 11 7 34
 12 - 13 1 34

HEX.
INV.
7406 BUFF.

U21
 1 - 2 10
 3 - 4 10
 5 - 6 10
 9 - 8 10
 11 - 10 25
 13 - 12

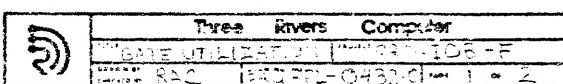
QUAD
74LS08 POS. AND

U150 U99 U141
 1,2 - 3
 4,5 - 6
 9,10 - 8
 12,13 - 11

QUAD
74S08 POS. AND

U151
 1,2 - 3 34
 4,5 - 6 34
 9,10 - 8
 12,13 - 11

(3)



TRIPLE
3 IN
74LS10 POS. NAND U89

1,2,13 - 12	
3,4,5 - 6	29
9,10,11 - 8	26

74LS32 U34

1,2 - 3	23
4,5 - 6	23
8,9 - 10	
11,12 - 13	

QUAD
74S86 EXC. OR U38 U156

1,2 - 3	10	12
4,5 - 6	11	12
9,10 - 8	11	
12,13 - 11		

DUAL
74S112 FLIP-FLOP U47

1,2,3,4,5,6,15	1
7,9,10,11,12,13,14	

OCTAL BUFF
74S240 INV. 3ST CUT U59 U16

2 - 18	3	31
4 - 16	2	31
6 - 14	25	31
8 - 12	25	31
11 - 9	19	
13 - 7	29	31
15 - 5	24	31
17 - 3	3	

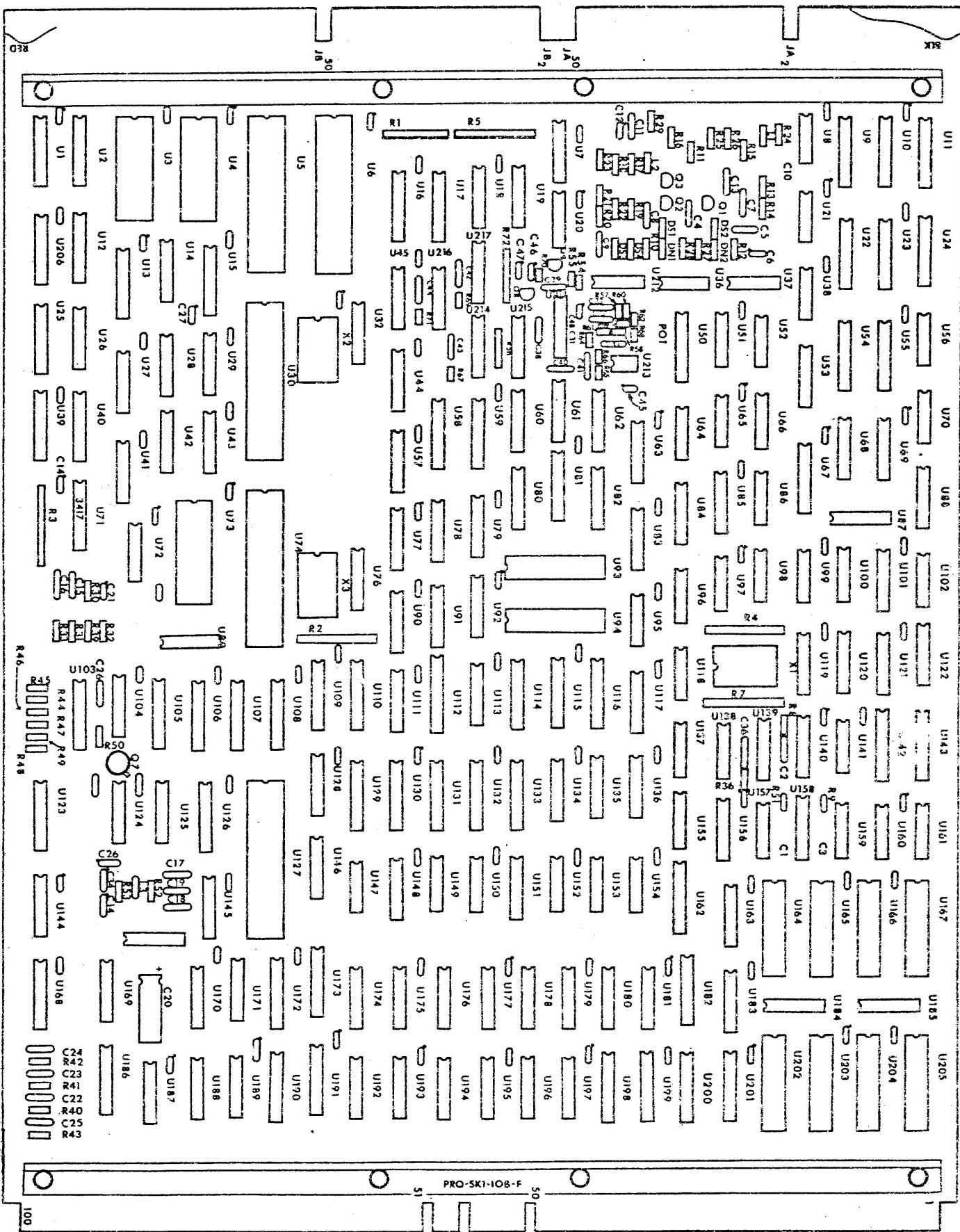
OCTAL BUFF
74LS244 NONINV. 3ST U112

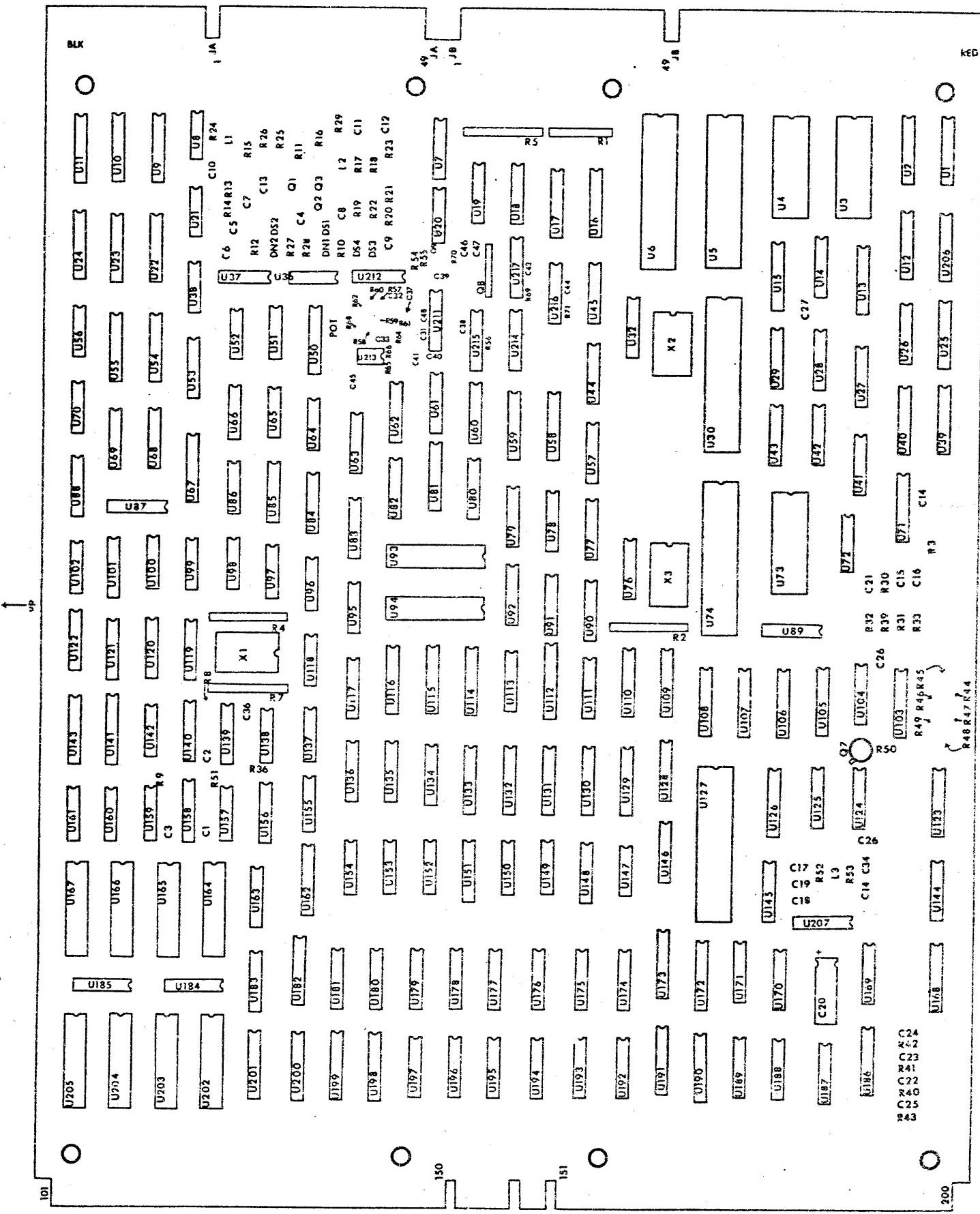
1 (3ST)	
2 - 18	
4 - 16	
6 - 14	
8 - 12	
11 - 9	
13 - 7	1
15 - 5	
17 - 3	
19 (3ST)	1

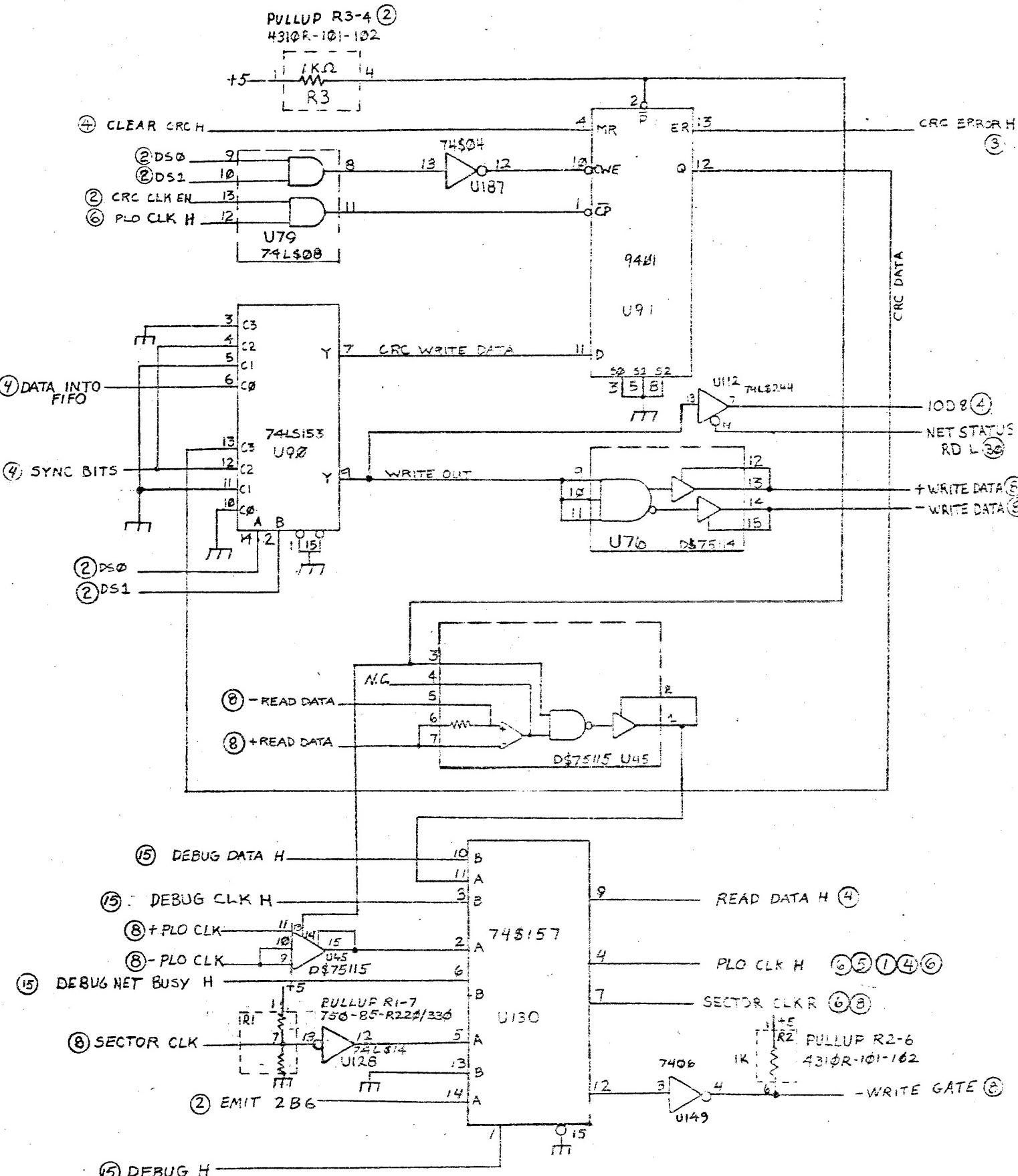
<u>UNUSED PULLUPS</u>	
<u>RESISTOR PACKAGES</u>	
<u>SIP</u>	<u>MANUFAC. #</u>
R1-PINS 8,9,10	750-85-R220/330
R2-PIN 6	4310R-101-102
R3-PINS 9,10	4310R-101-102
R4-PINS 2,8,9,10	4310R-101-102
R5-PINS 9,10	785-1-R330
R7-PINS 6,7,8,9,10	4310R-101-102
<u>DIP</u>	
U41-PINS 6,7,9	898-1-R10K

PERQ I/O SCHEMATIC INDEX

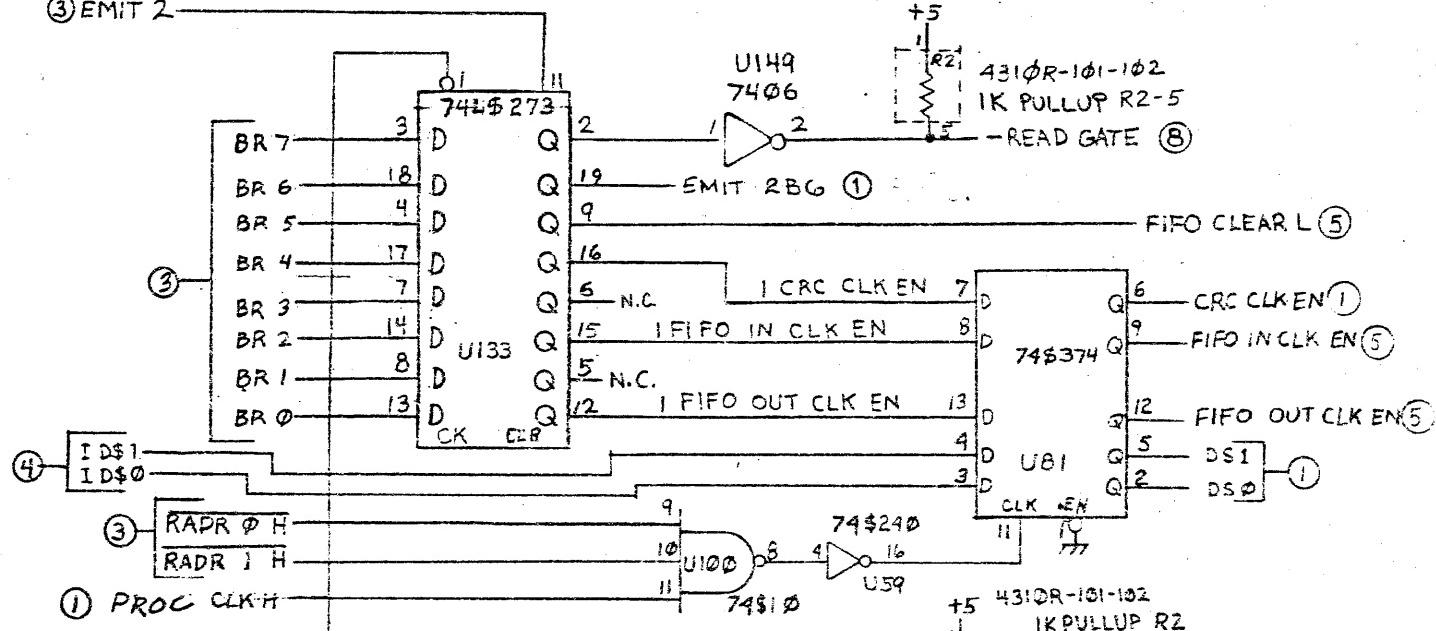
TITLE	PAGE
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Data Sequencer	3
Header Match	4
Memory Bus Interface	5
Disc Arm. Control	6
Disc Status Inputs	7
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Block Diagram	9
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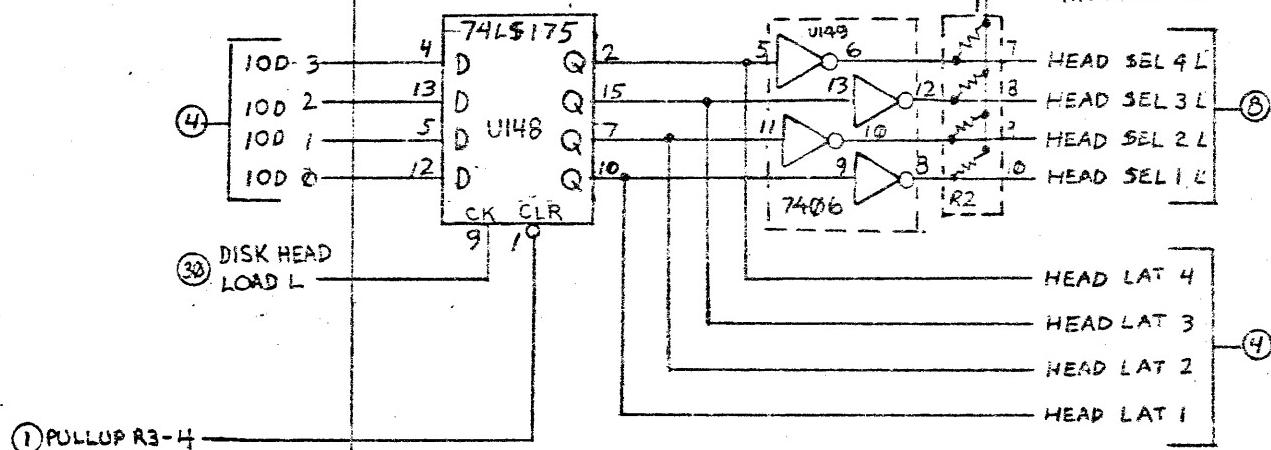




③ EMIT 2



① PROC CLK H



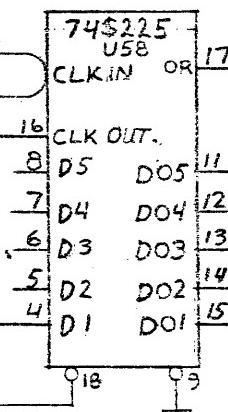
① PULLUP R3-4

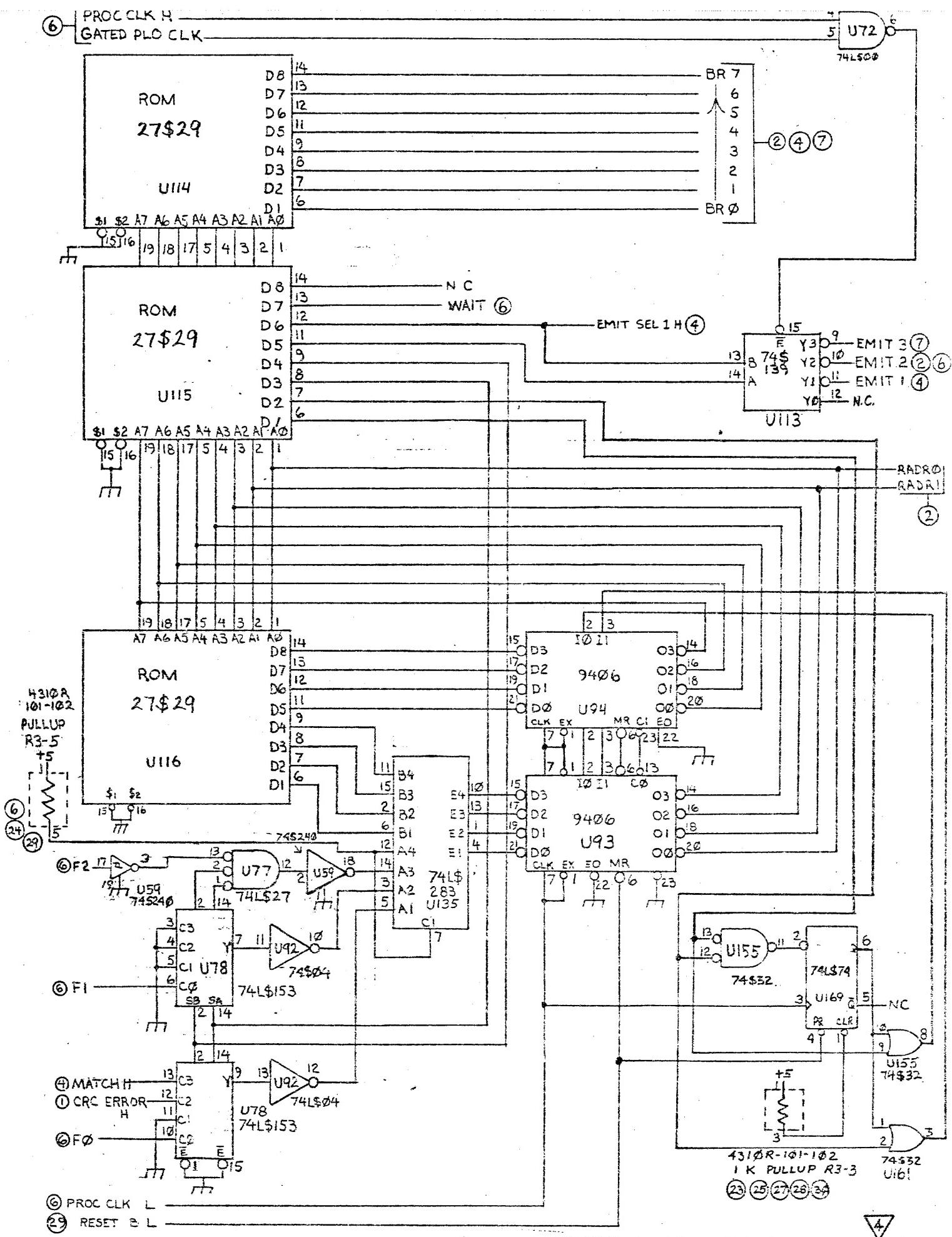
⑦ DISK DMA RQST IN

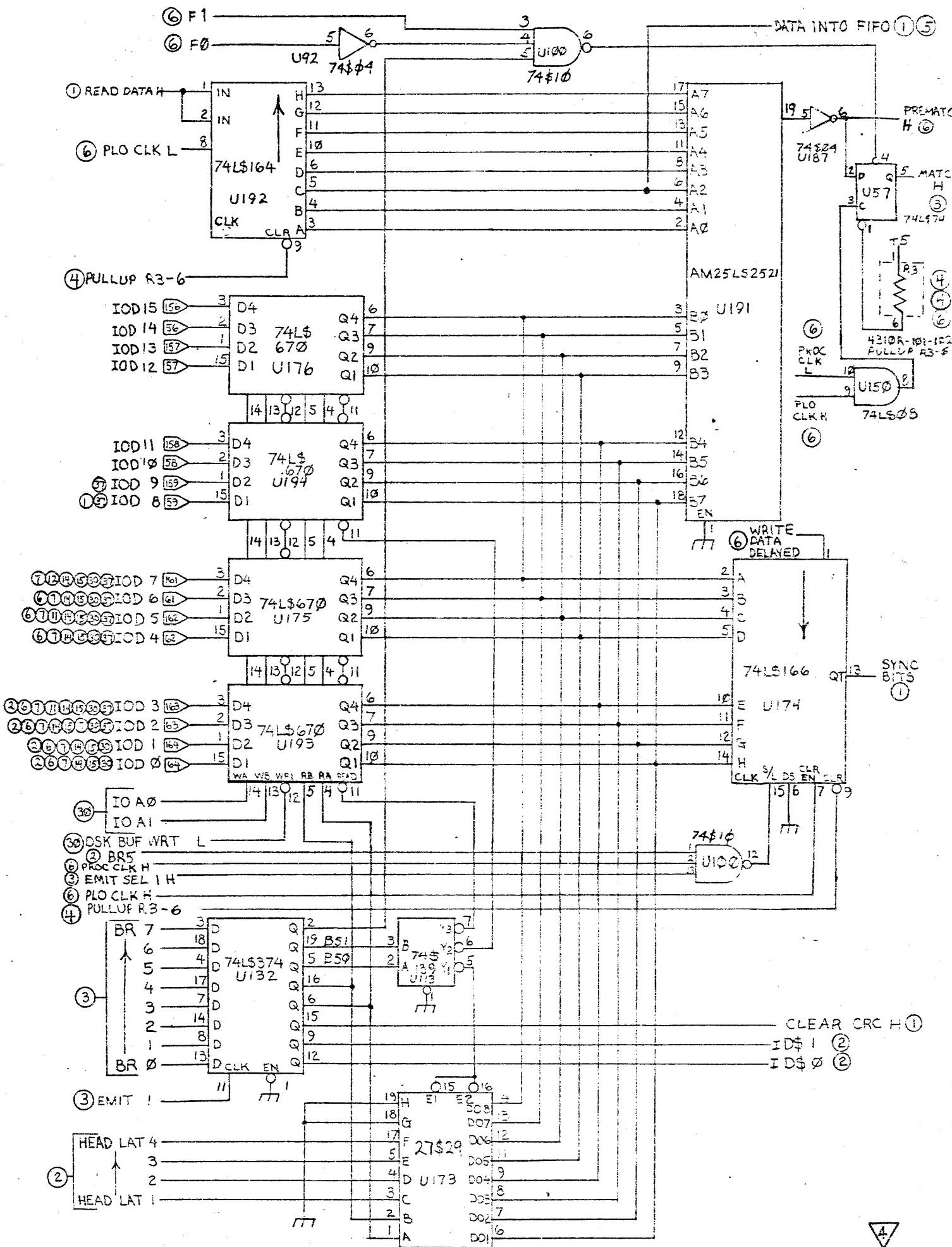
⑮ UNLD DISC FIFO

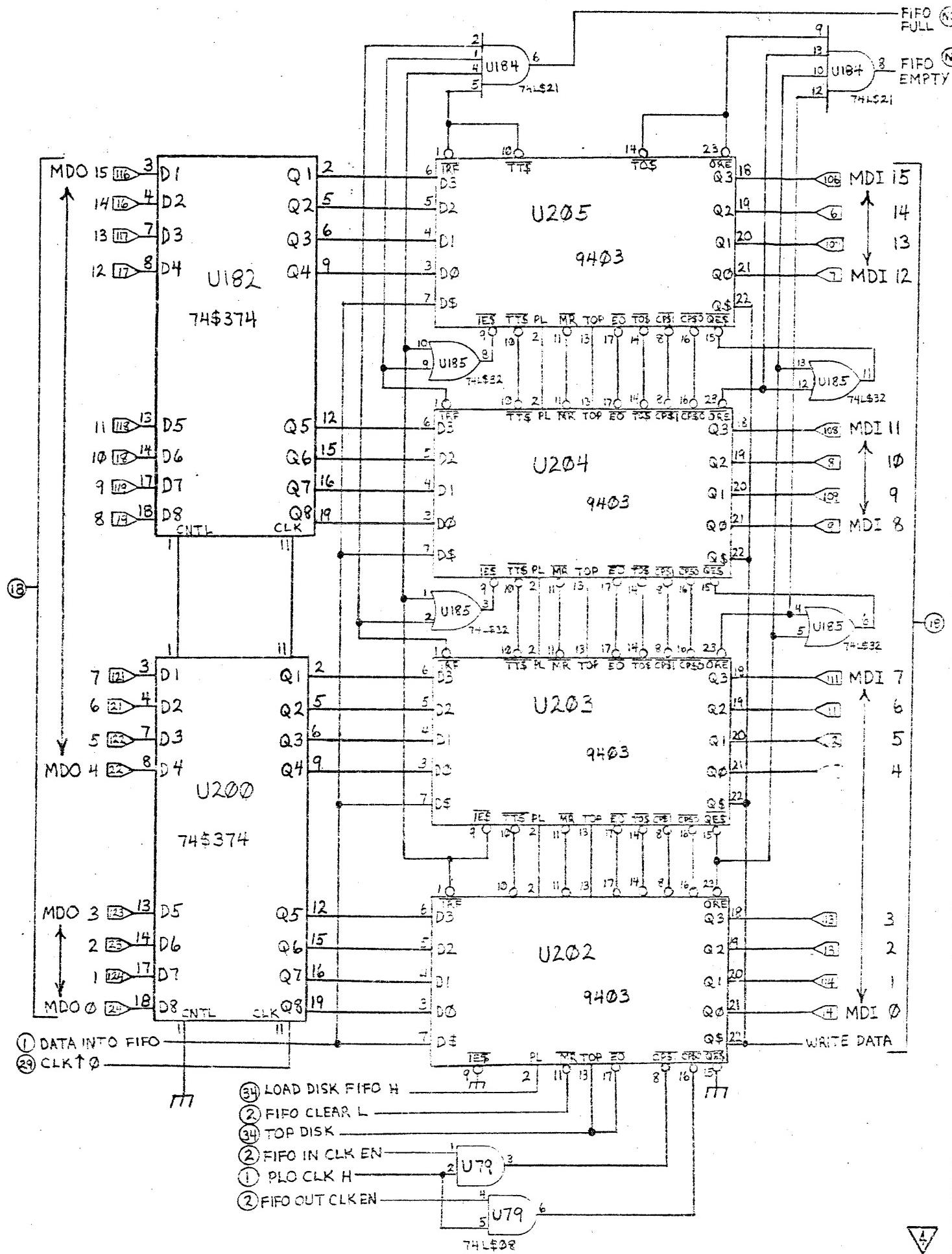
⑦ DISK WRITE OP H

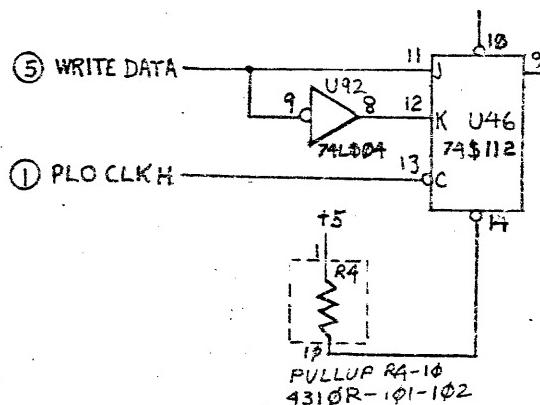
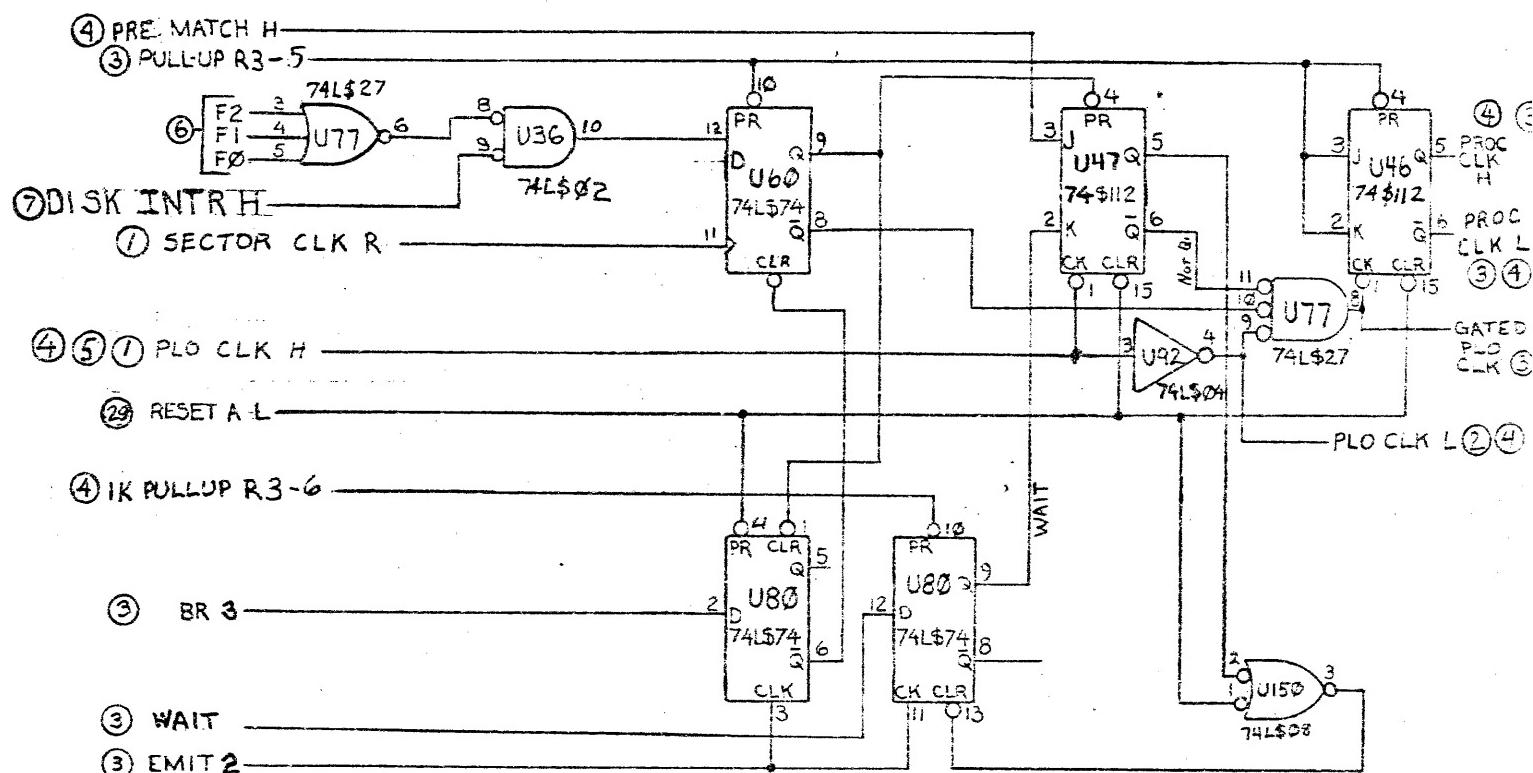
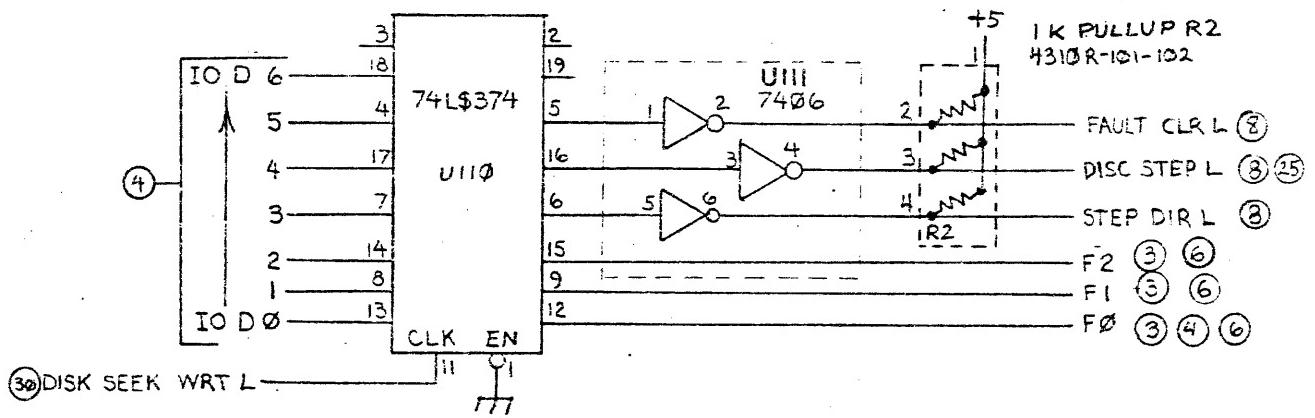
⑯ RESET 5 L





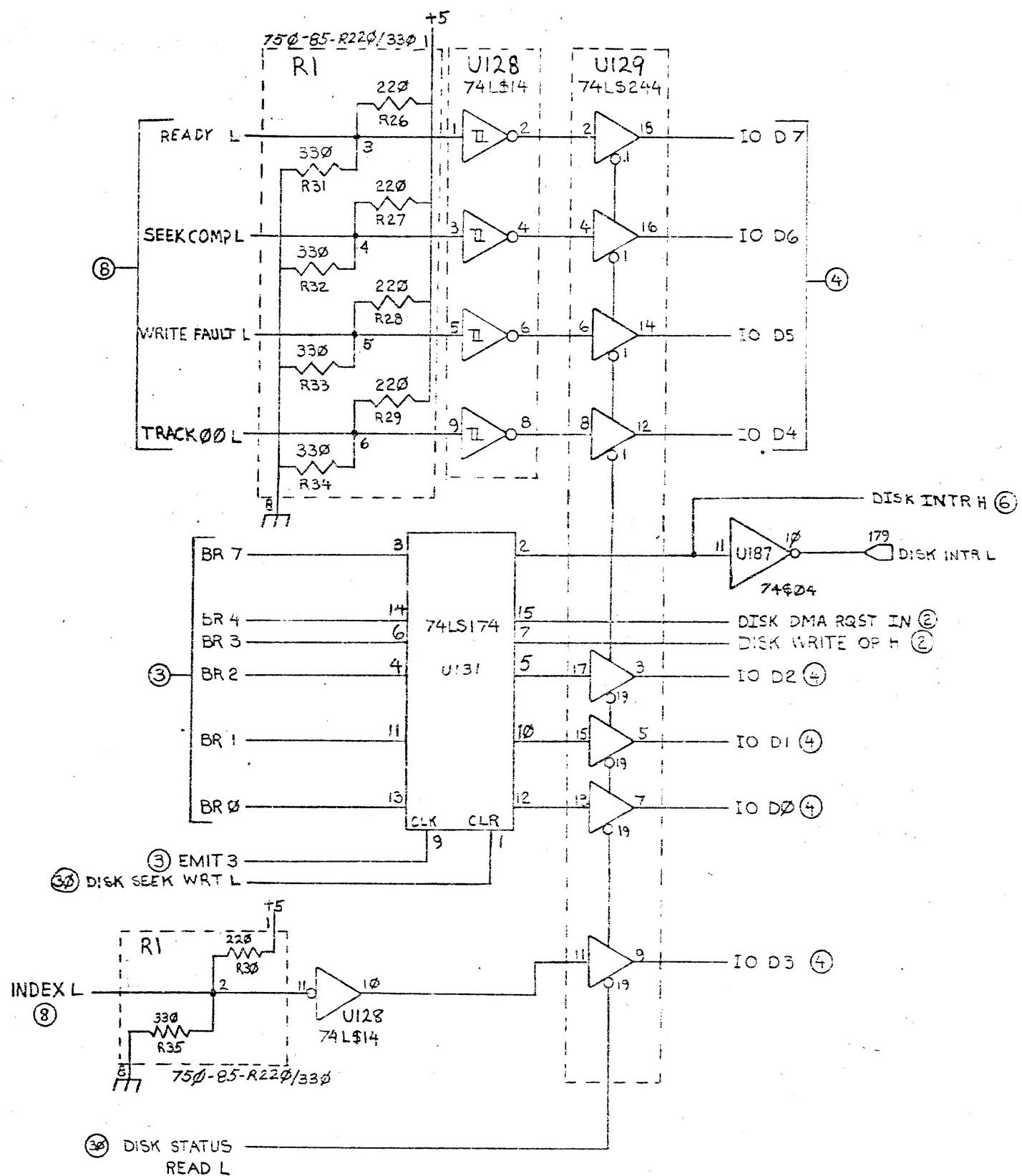






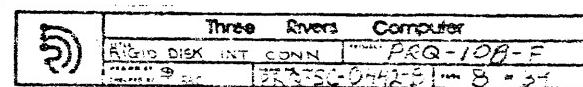
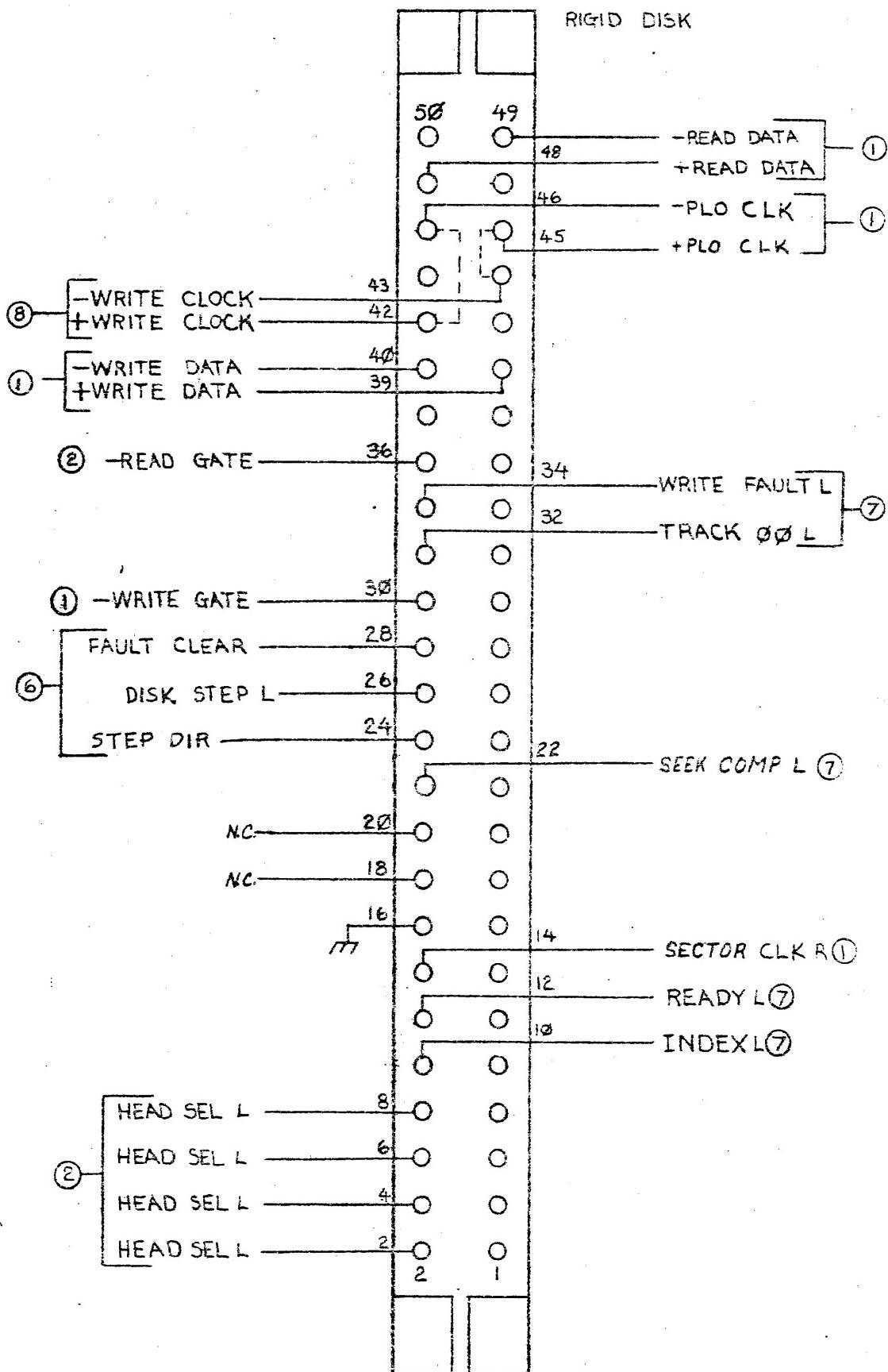
F0, F1, F2	PH	LH	DATA
0	IDLE	-	-
1	WRITE/CHECK	C	C W
2	WRITE/WRITE LH	C	W W
3	FORMAT WRITE	W	W W
4	READY/CHECK	C	C R
5	FORMAT READ	R	R R

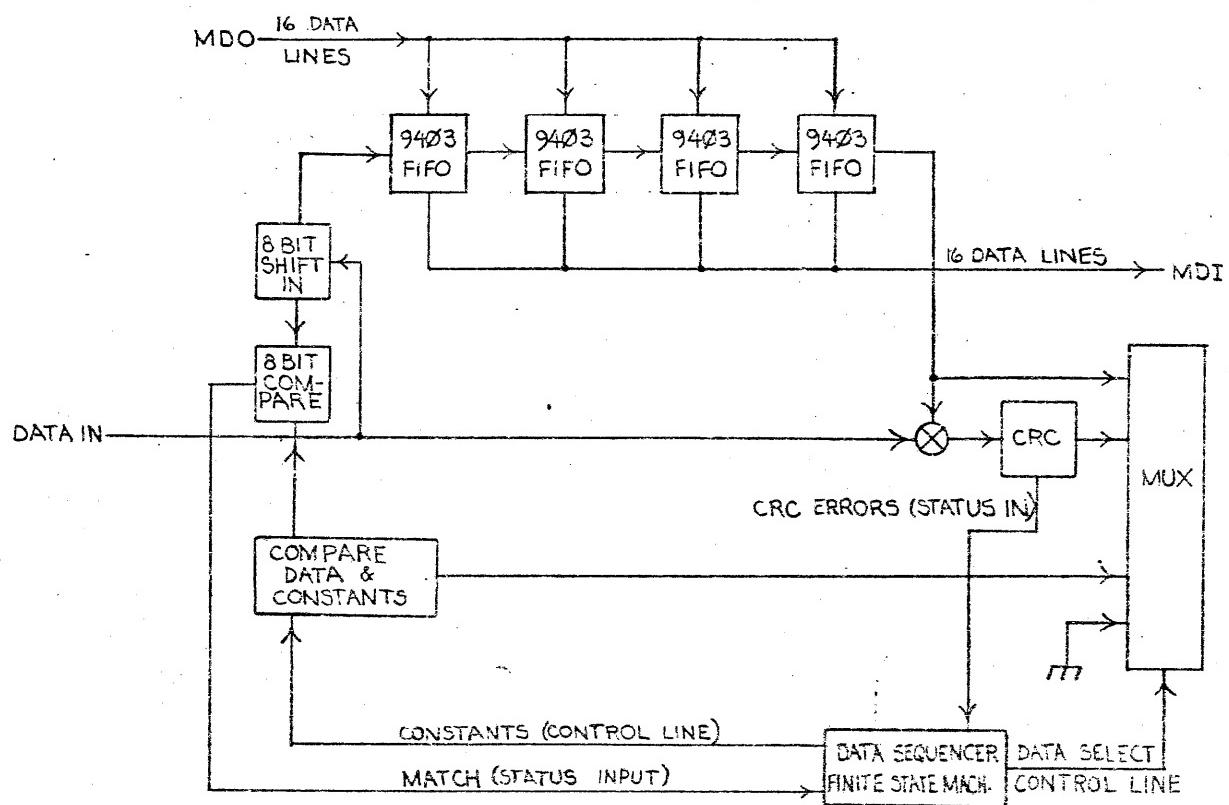
C = CHECK
R = READ
W = WRITE



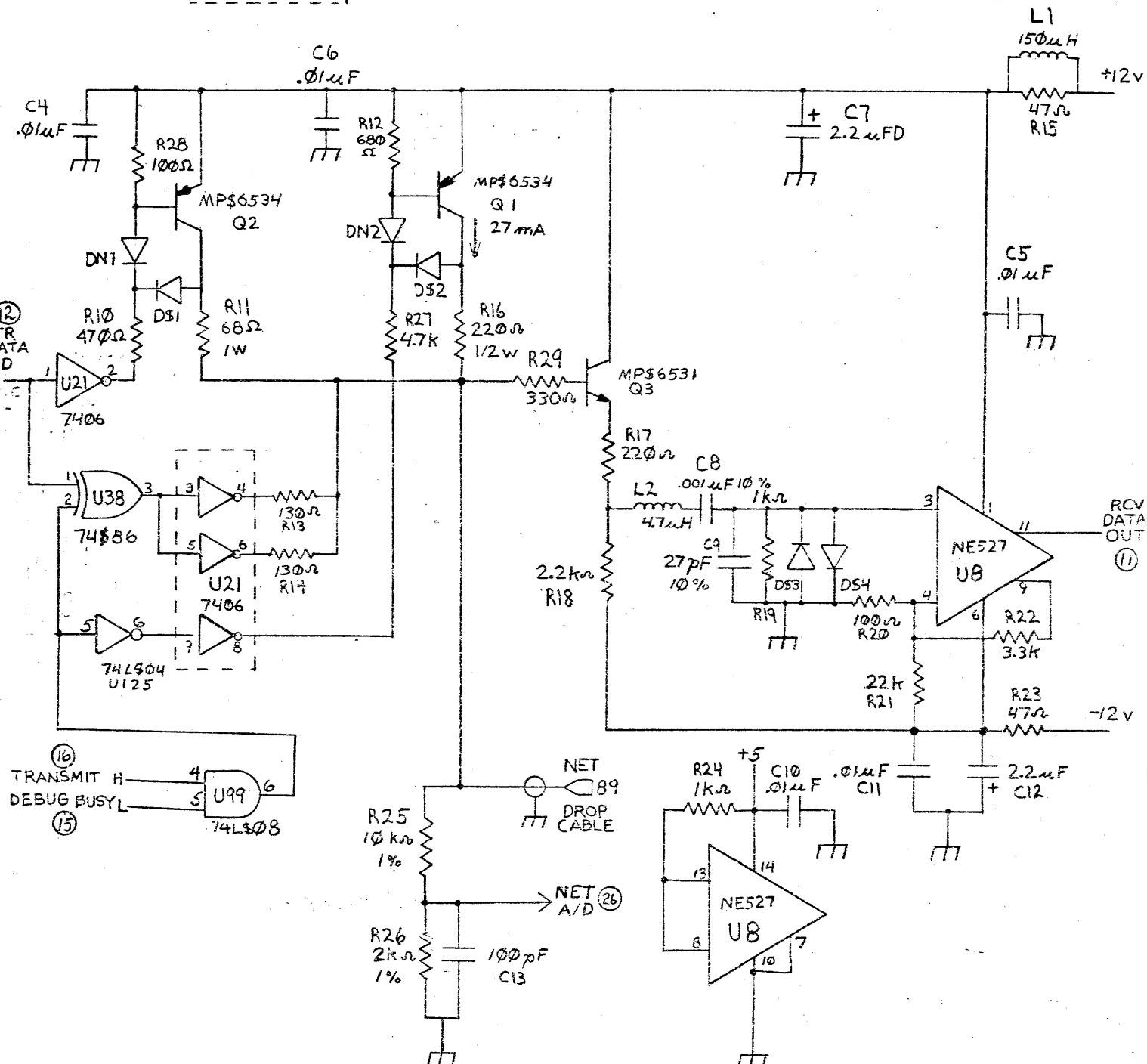
JB

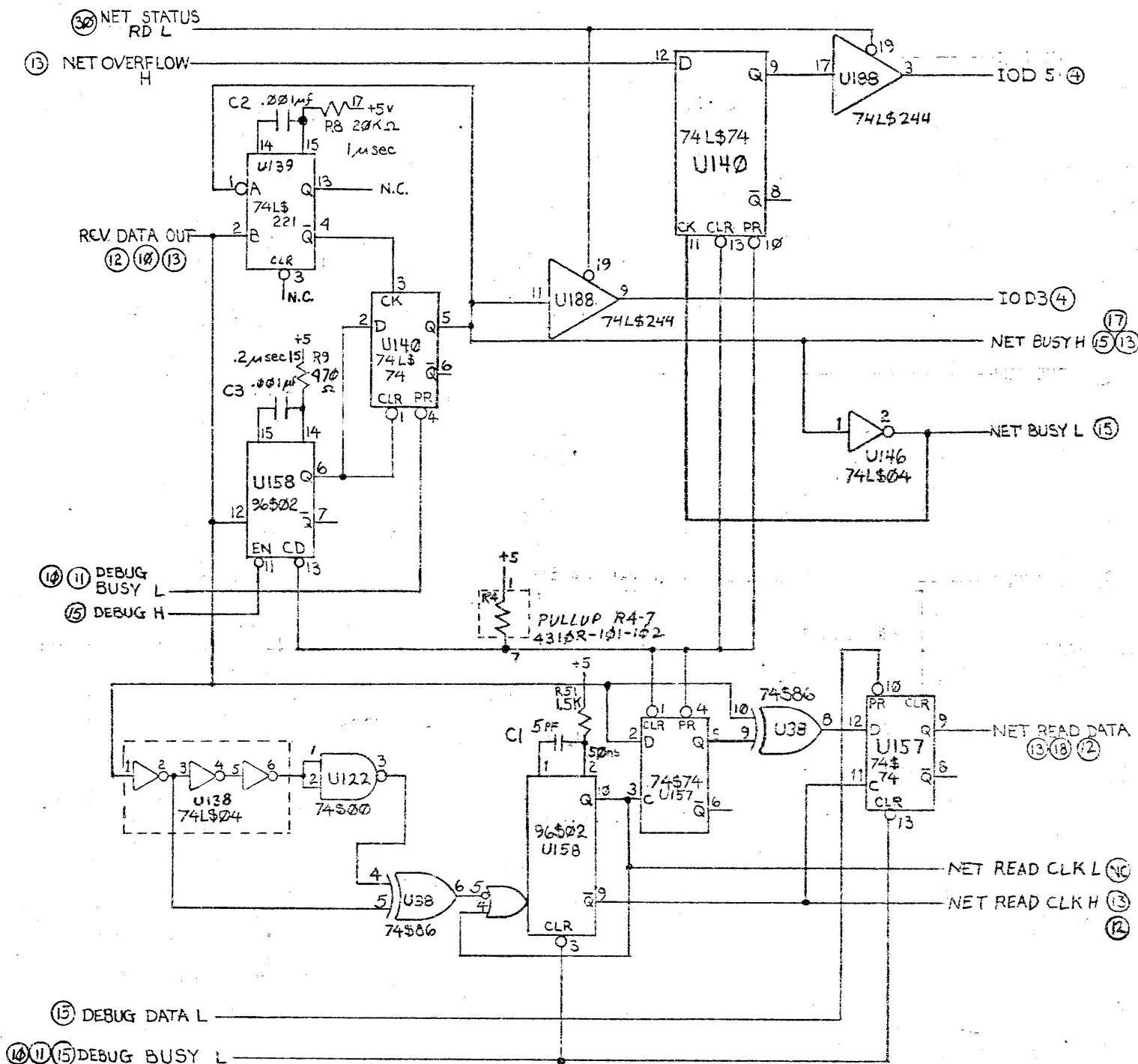
RIGID DISK

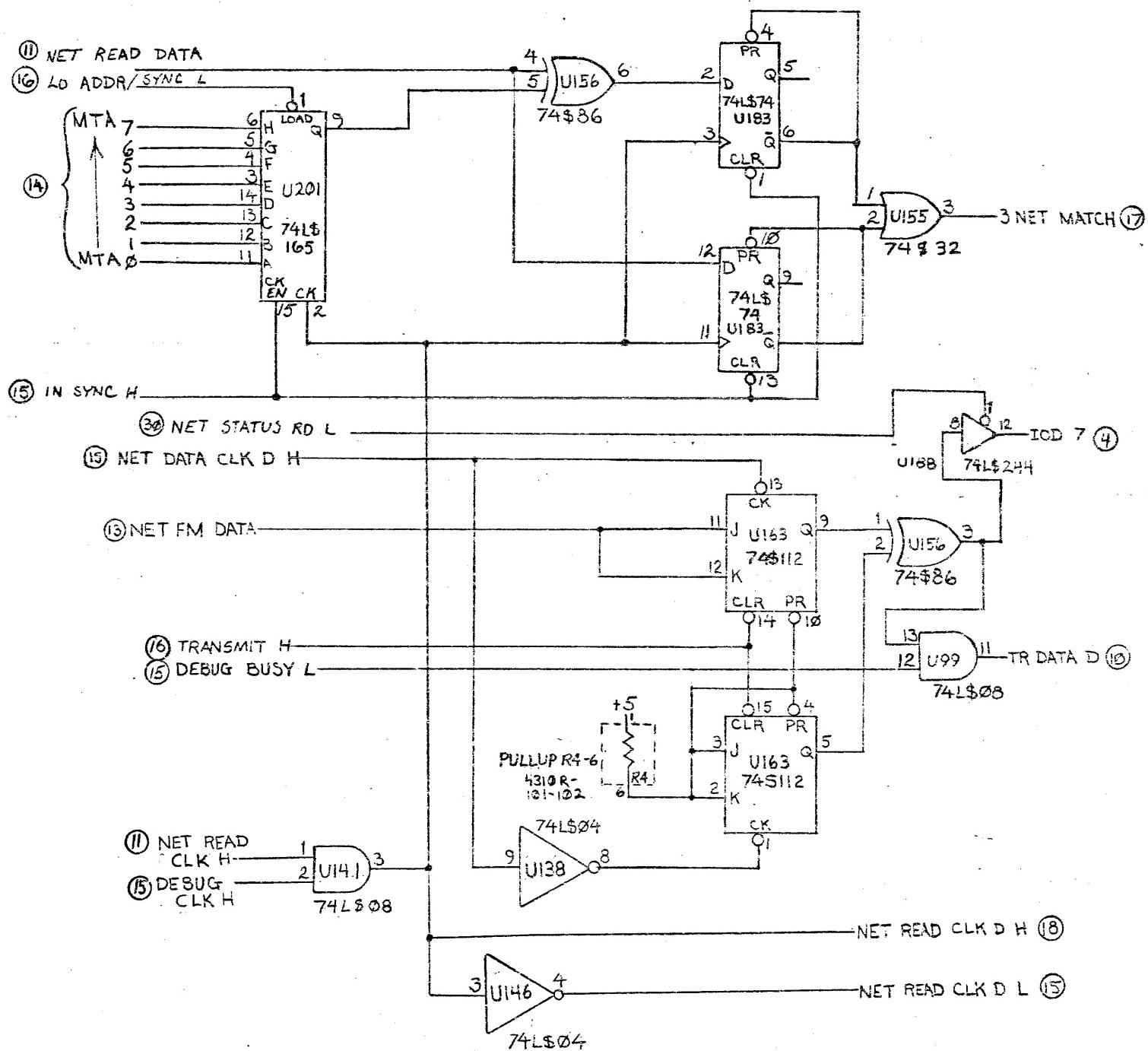


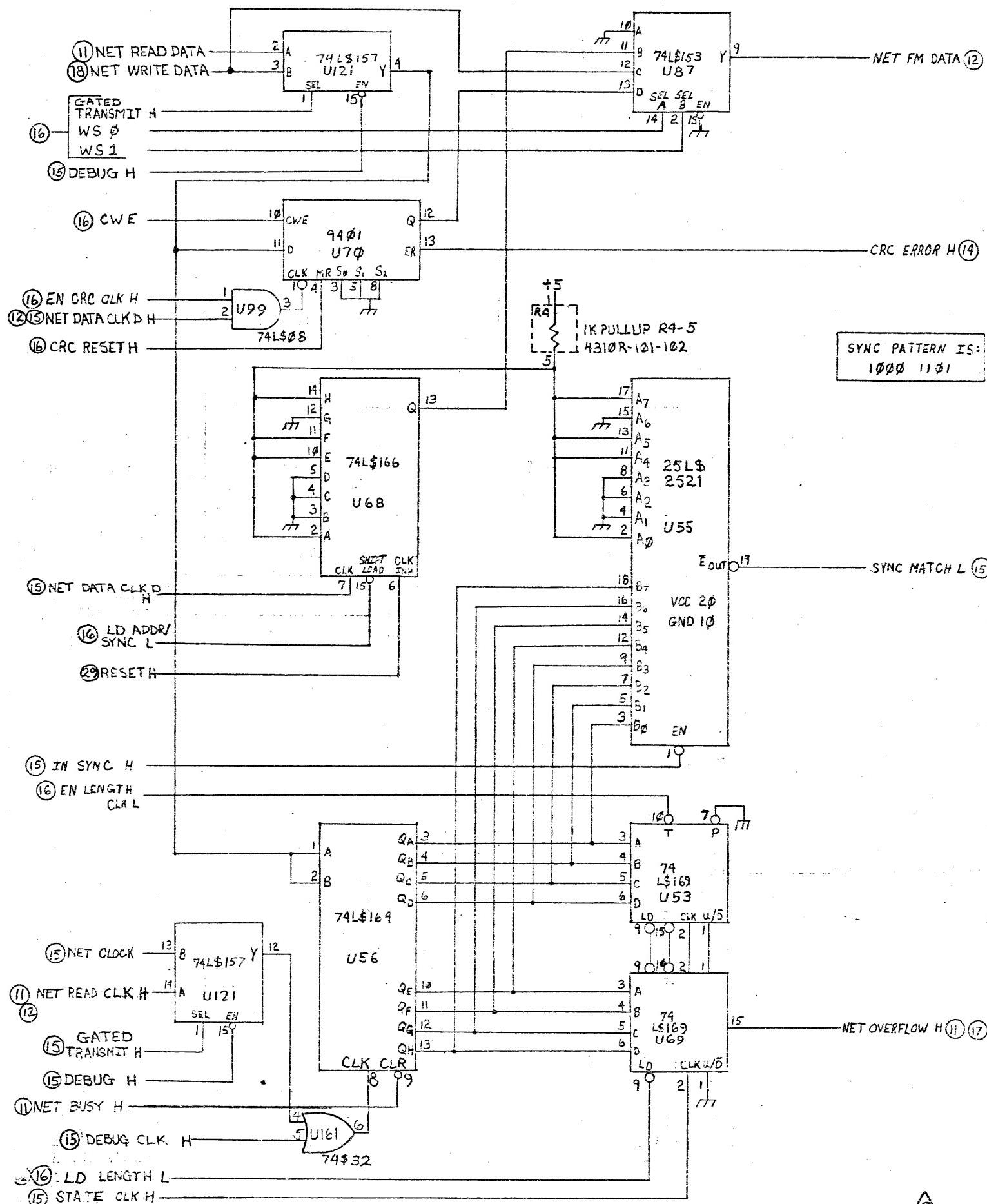


DN - IN4148
D\$ - A2\$810



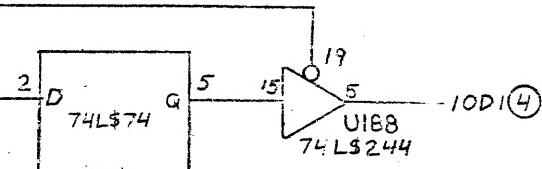




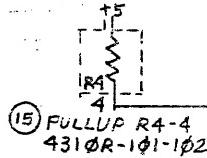


⑩ NET STATUS RD L

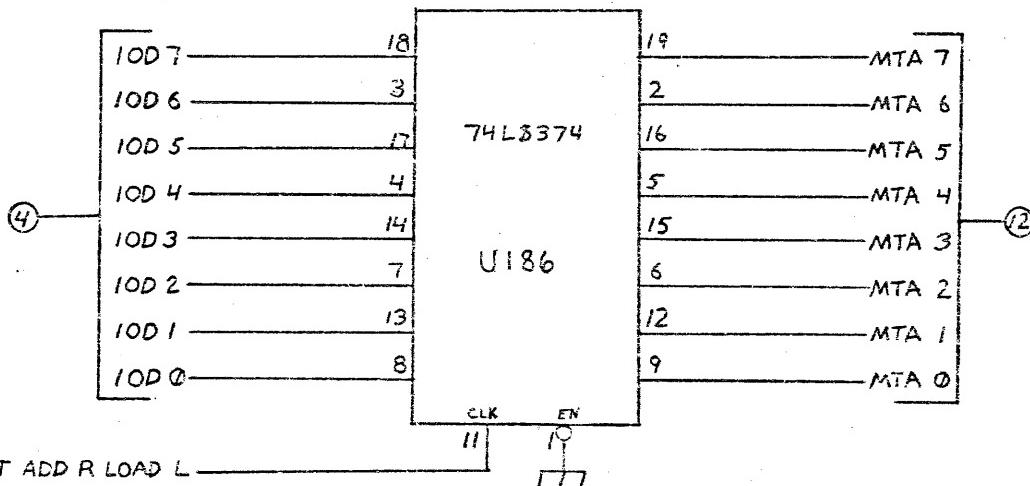
⑪ CRC ERROR H



⑫ NET HALT L

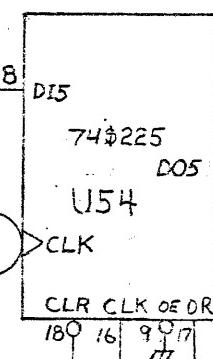


⑬ FULLUP R4-4
4310R-101-102



⑭ NET ADD R LOAD L

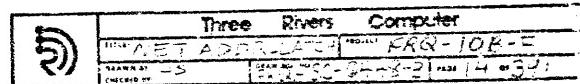
⑮ WRITE ON H

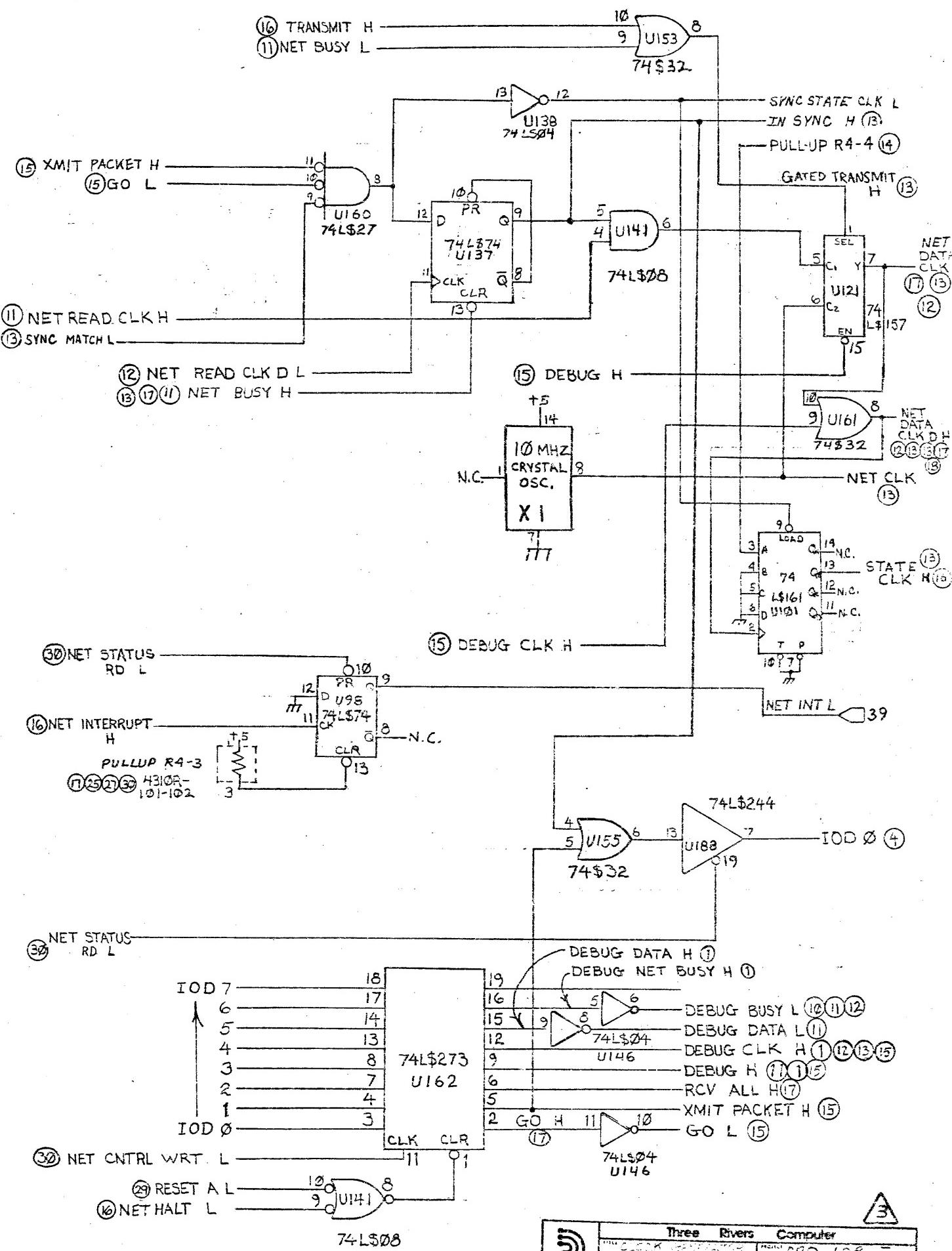


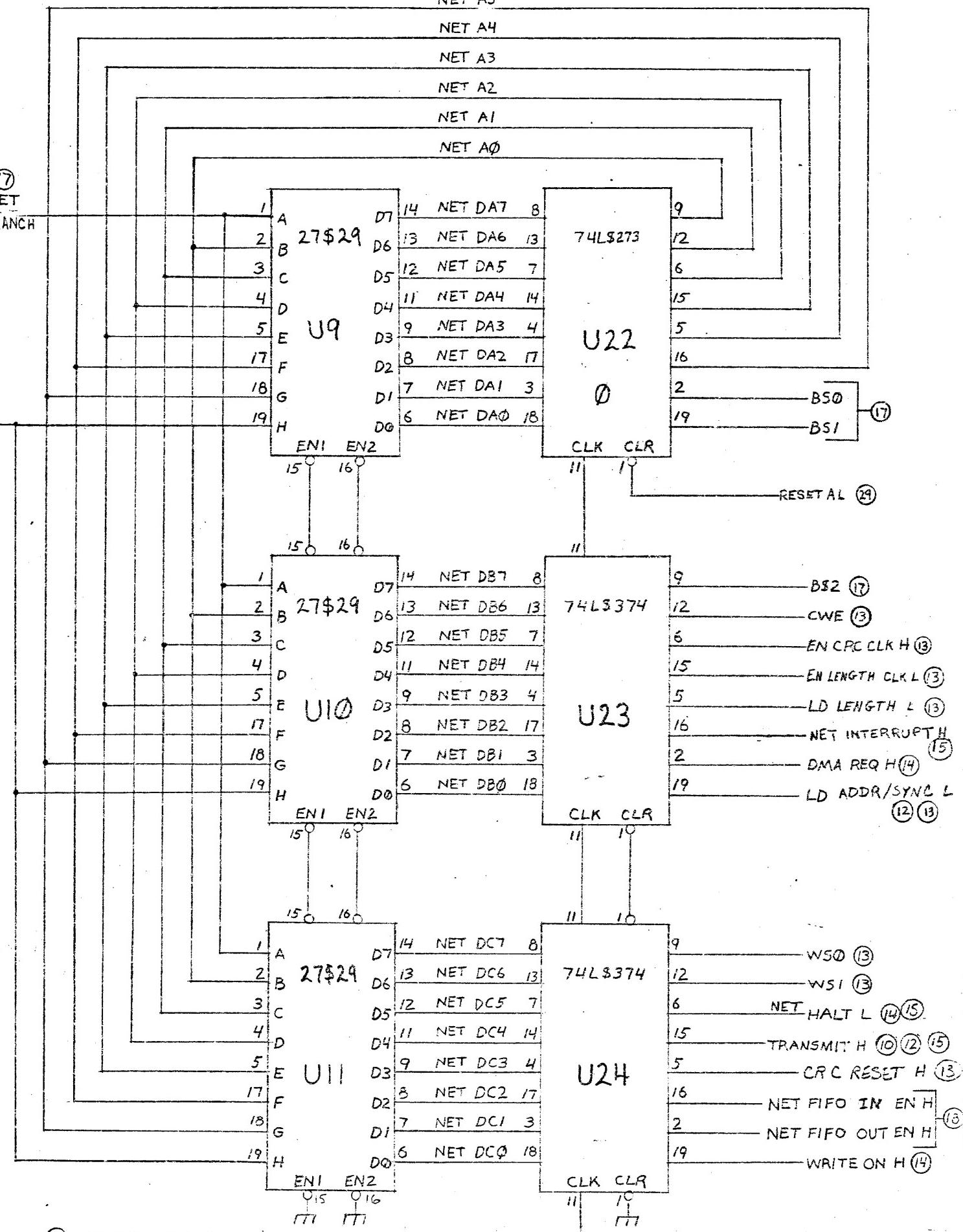
⑯ DMA REQ H

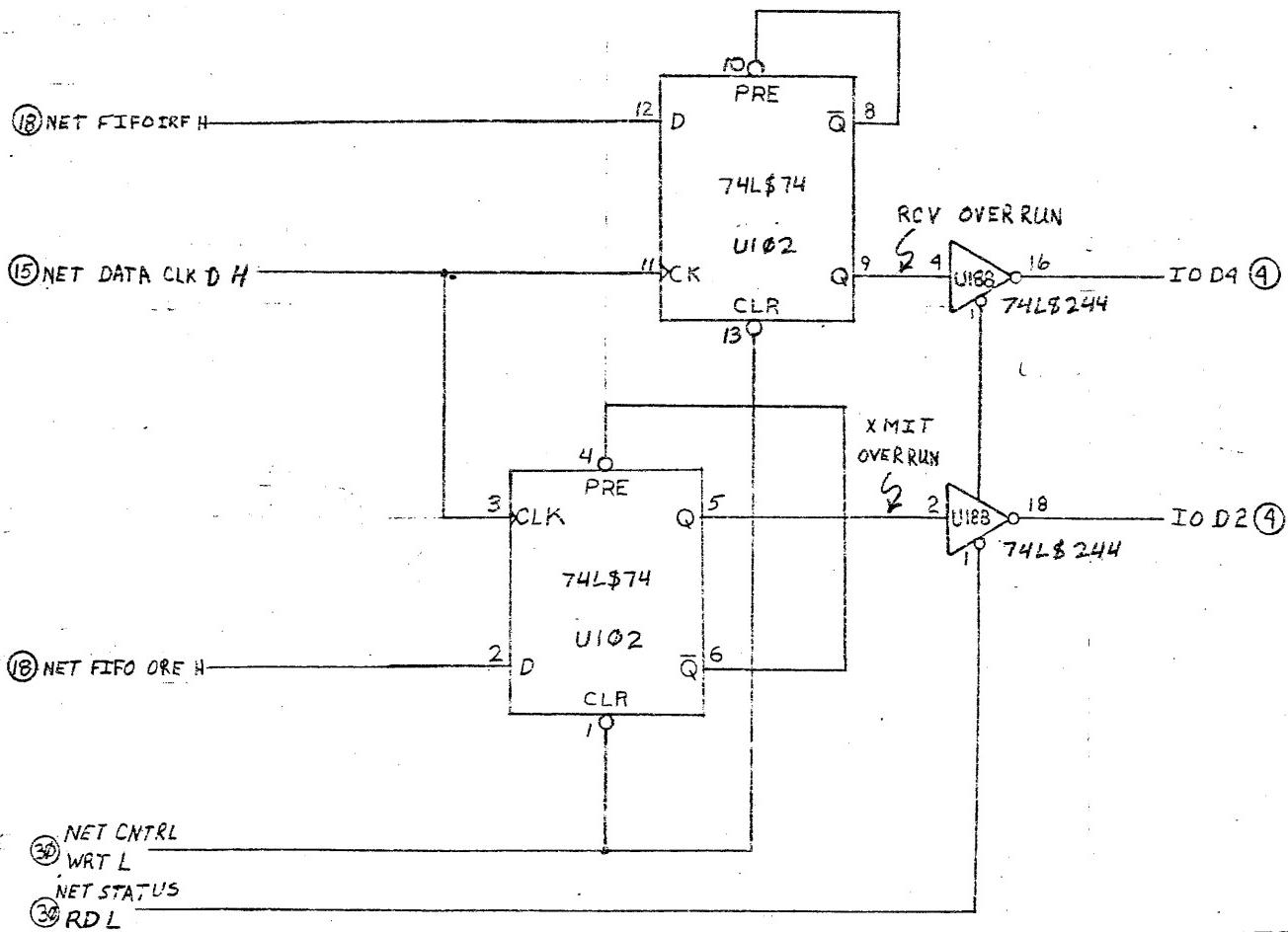
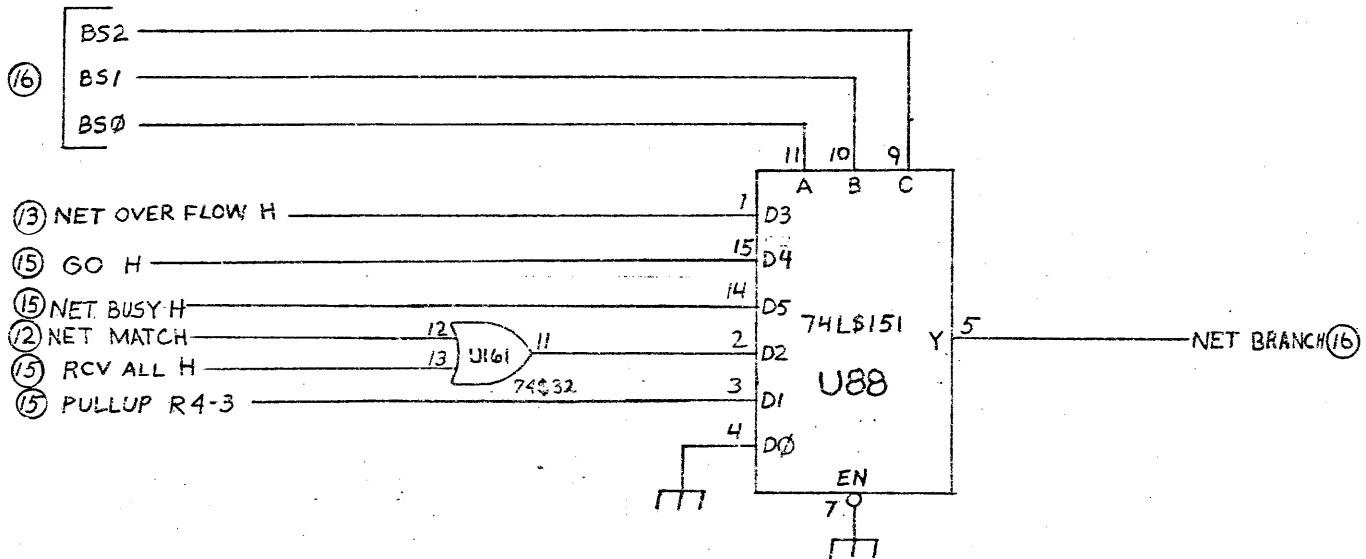
⑰ RESET B L

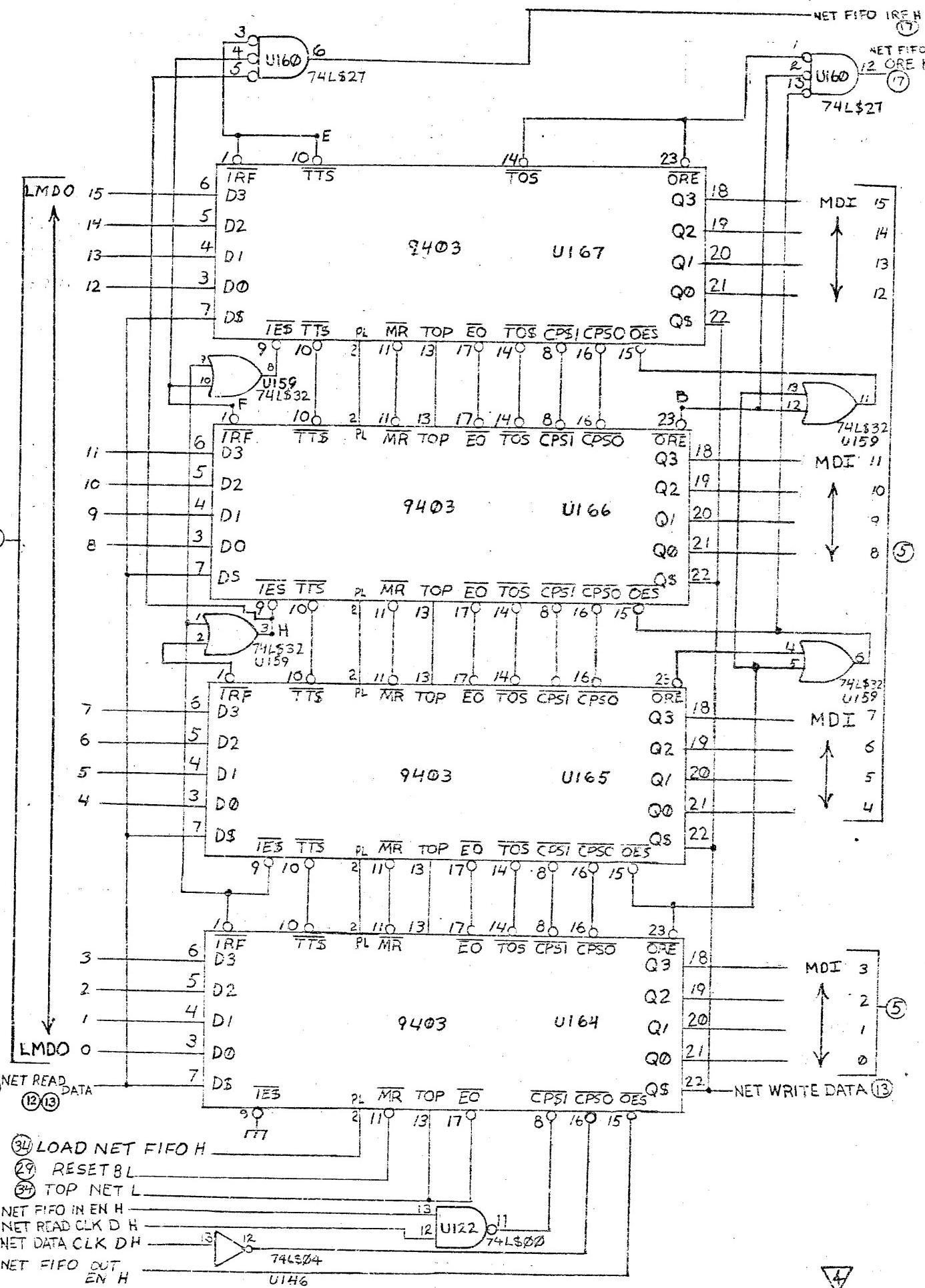
⑱ UNLOAD NET FIFO L

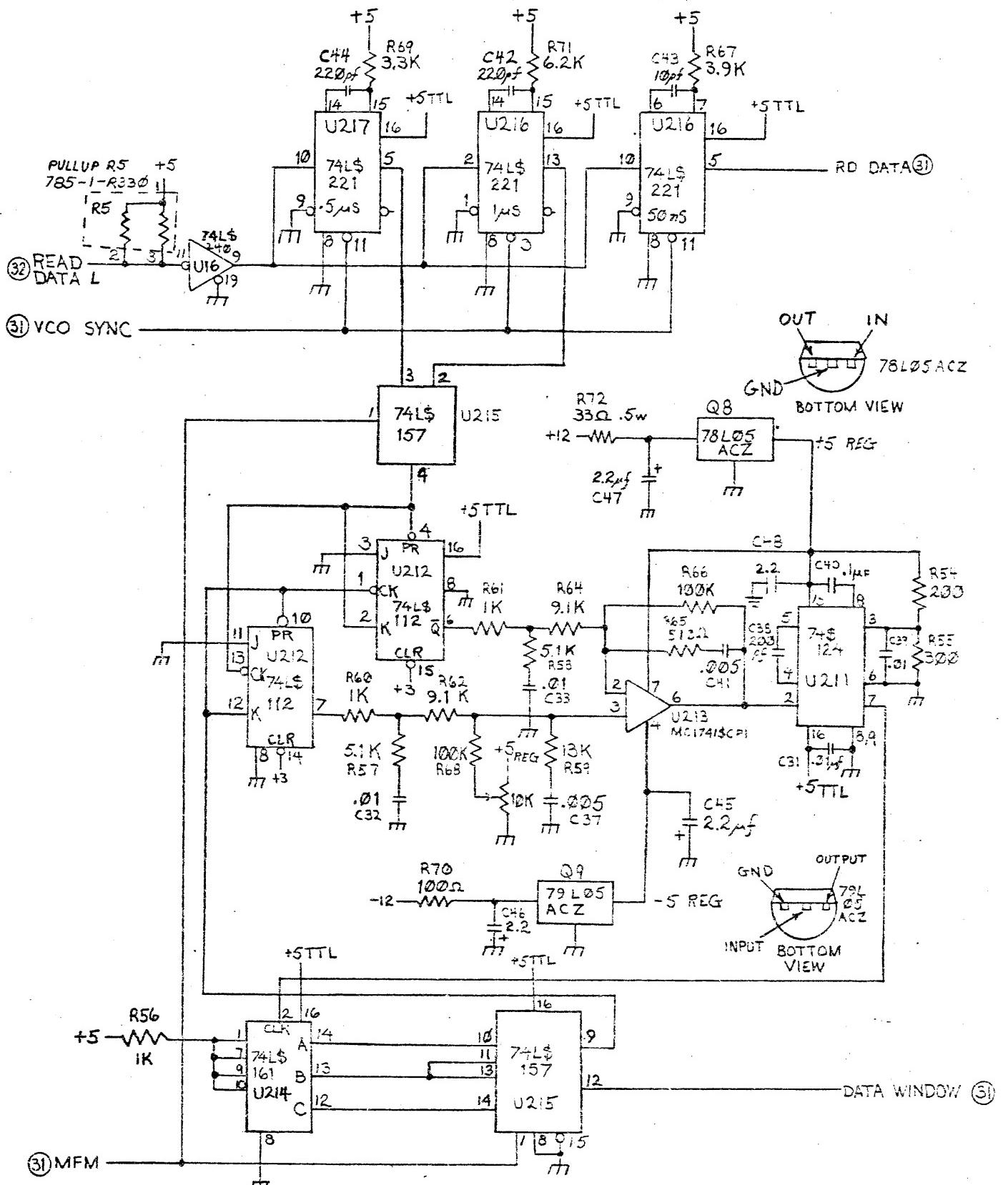


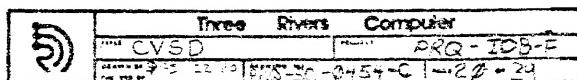
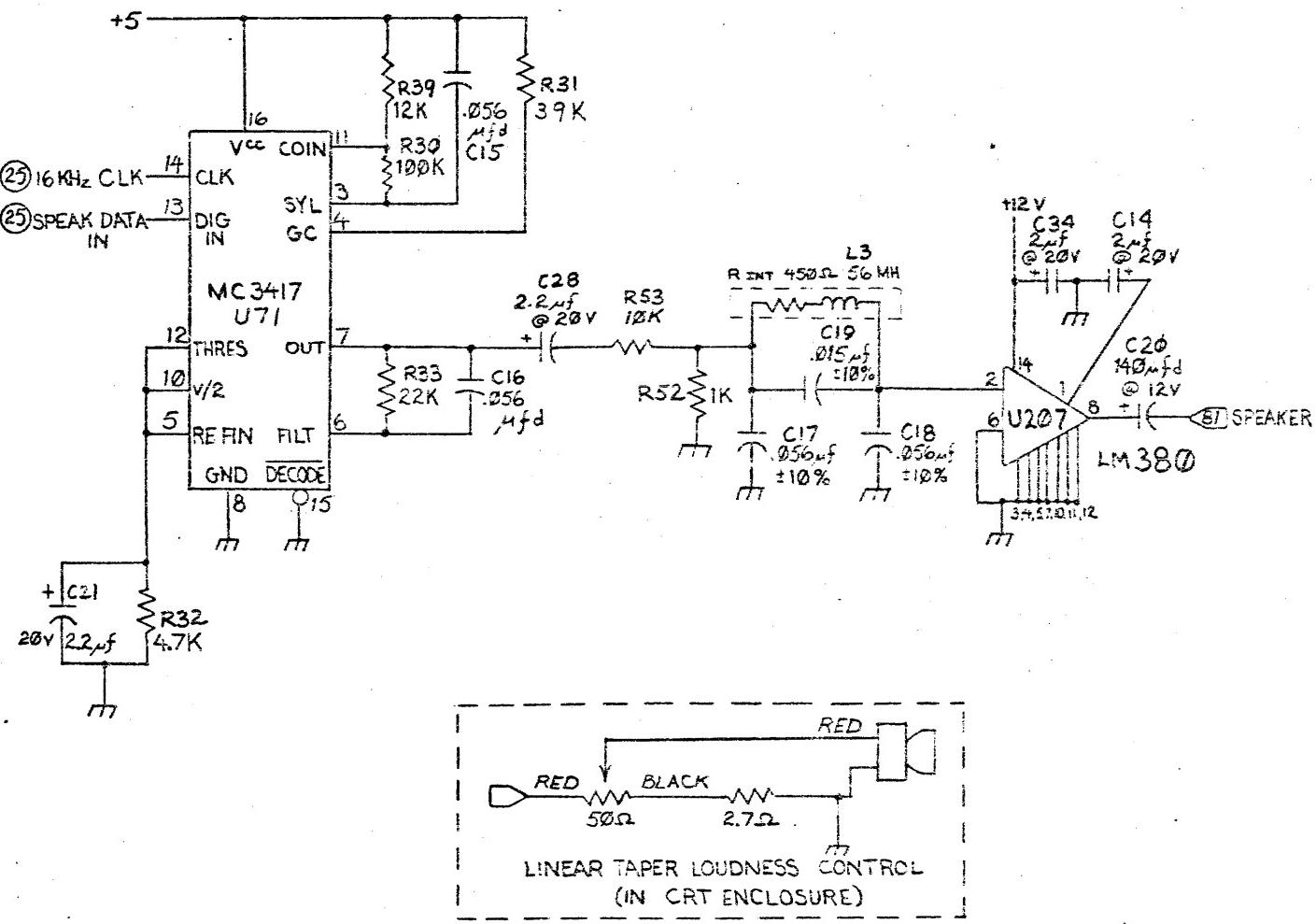


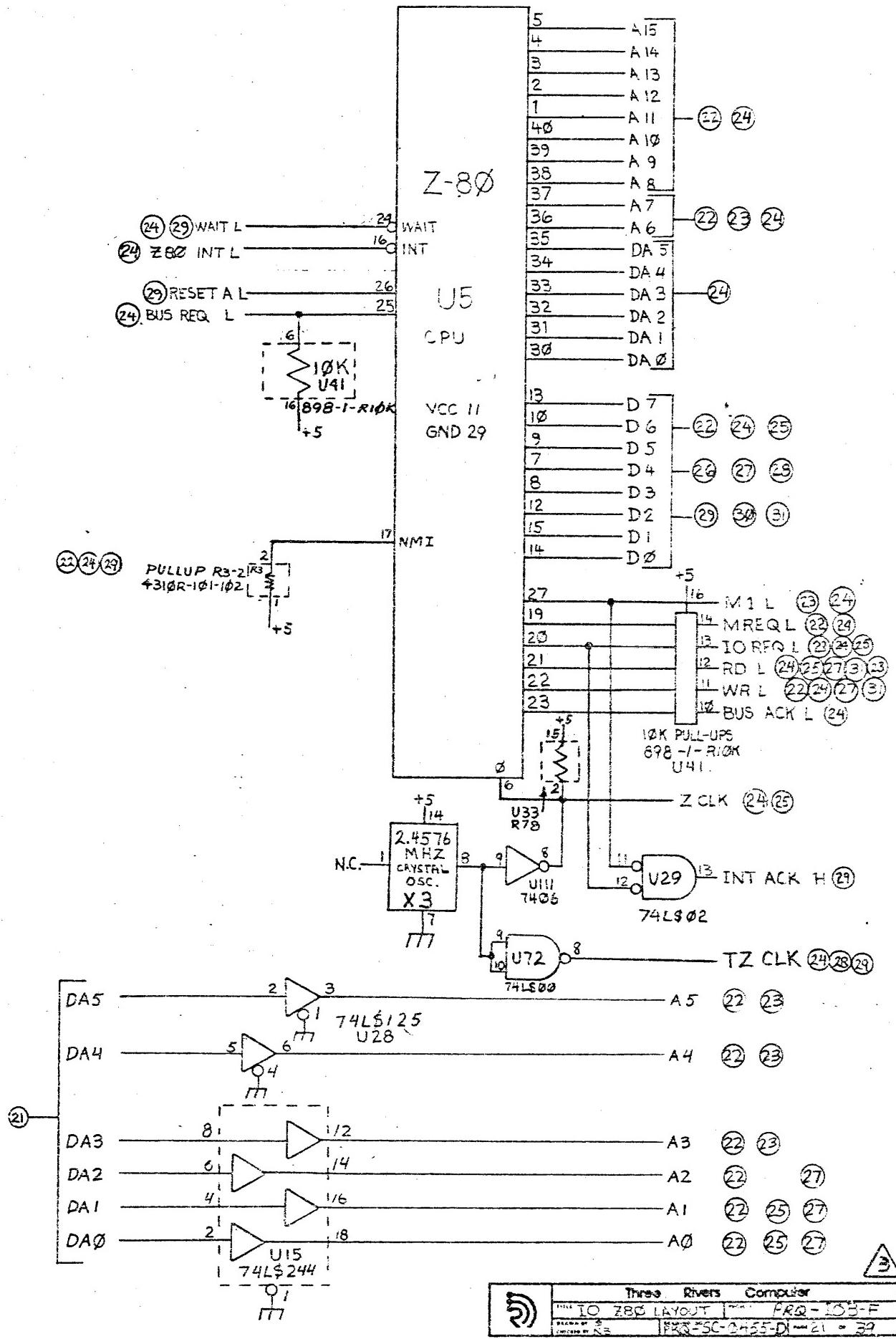




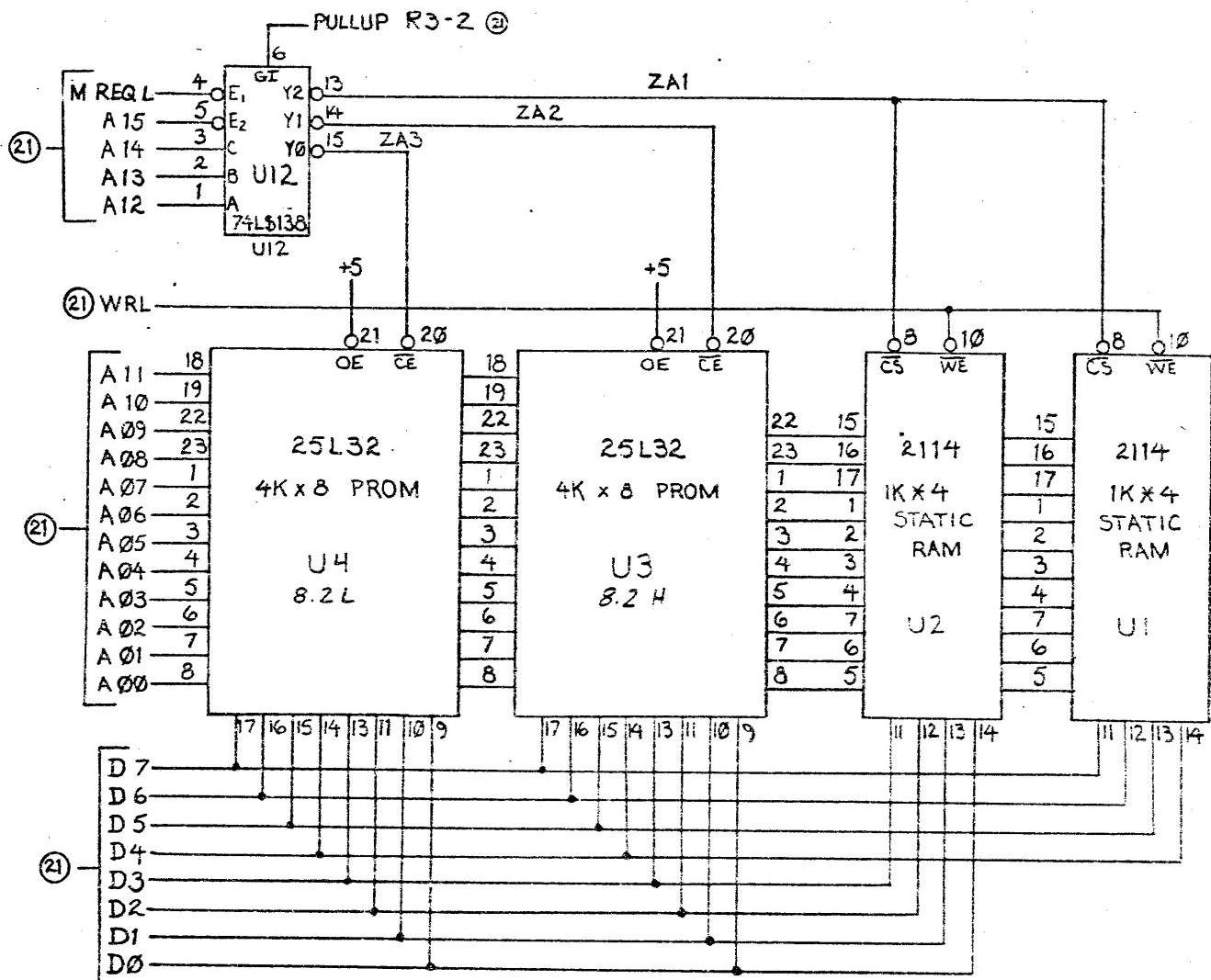






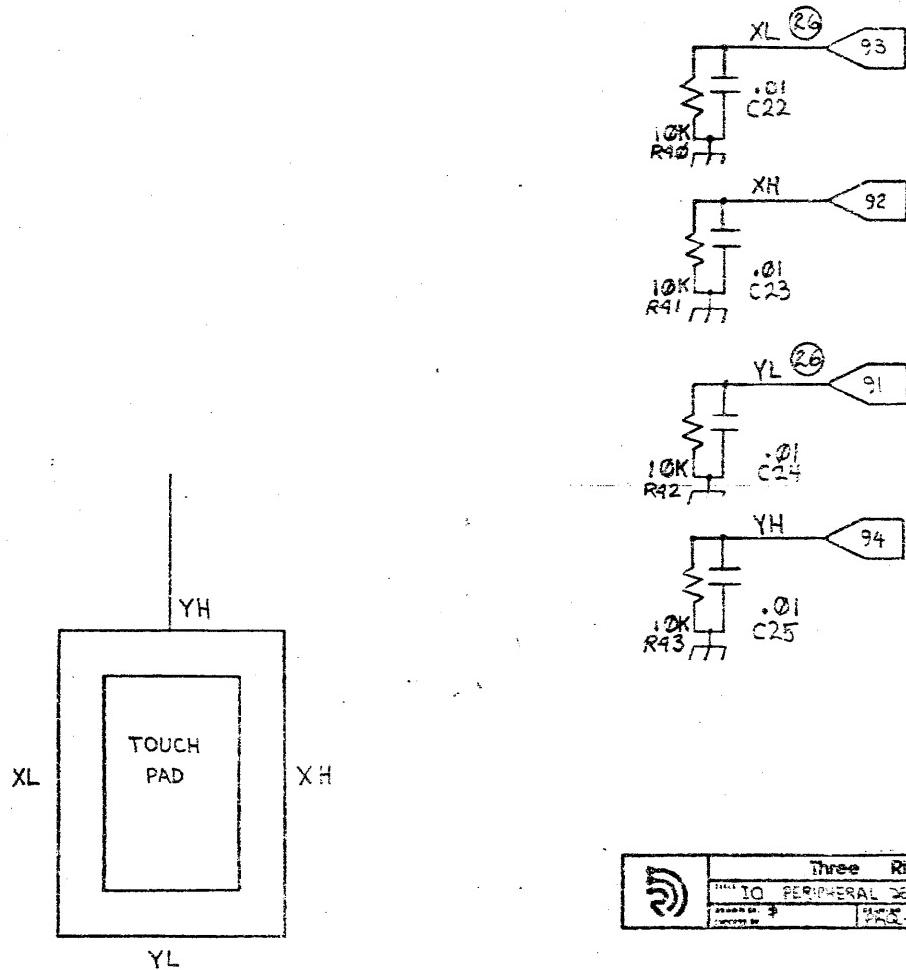
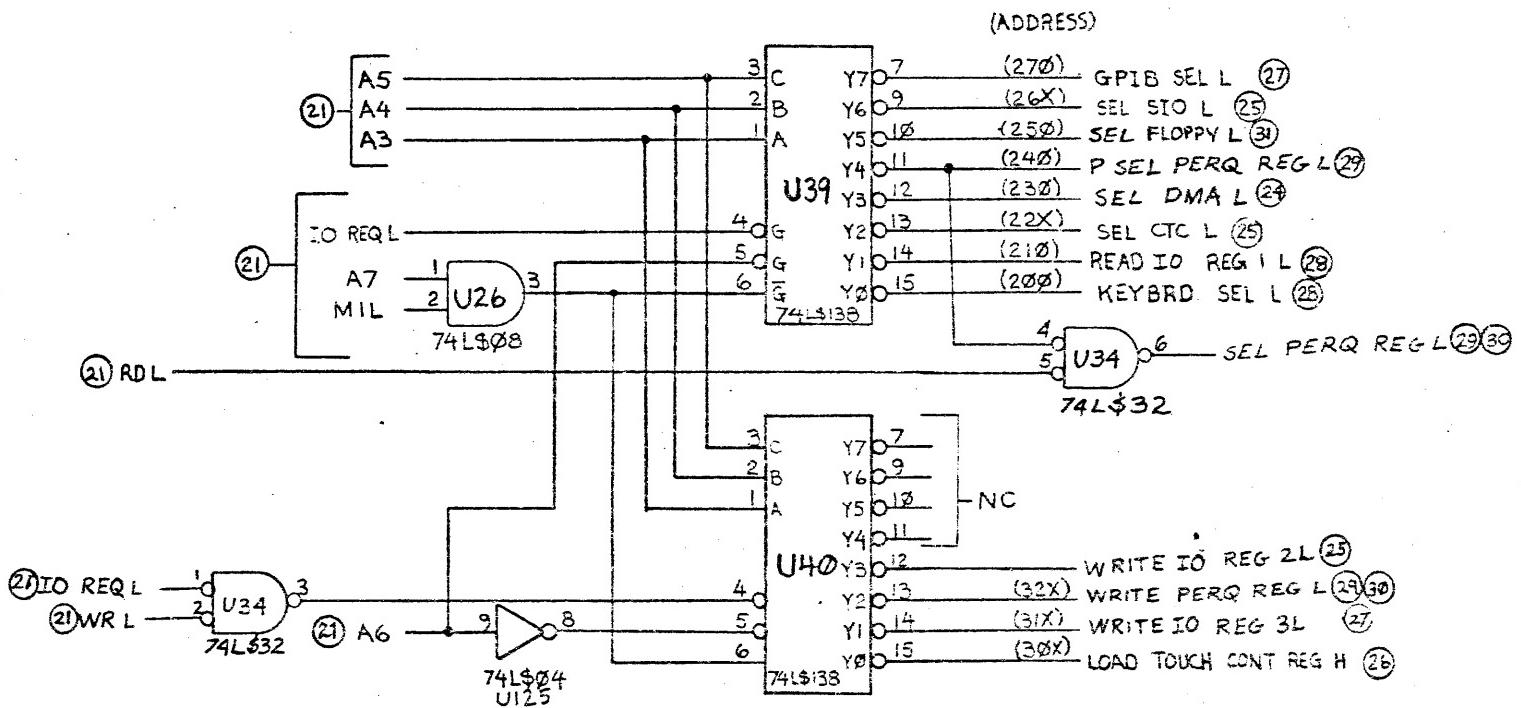


REV C 1/14/2020

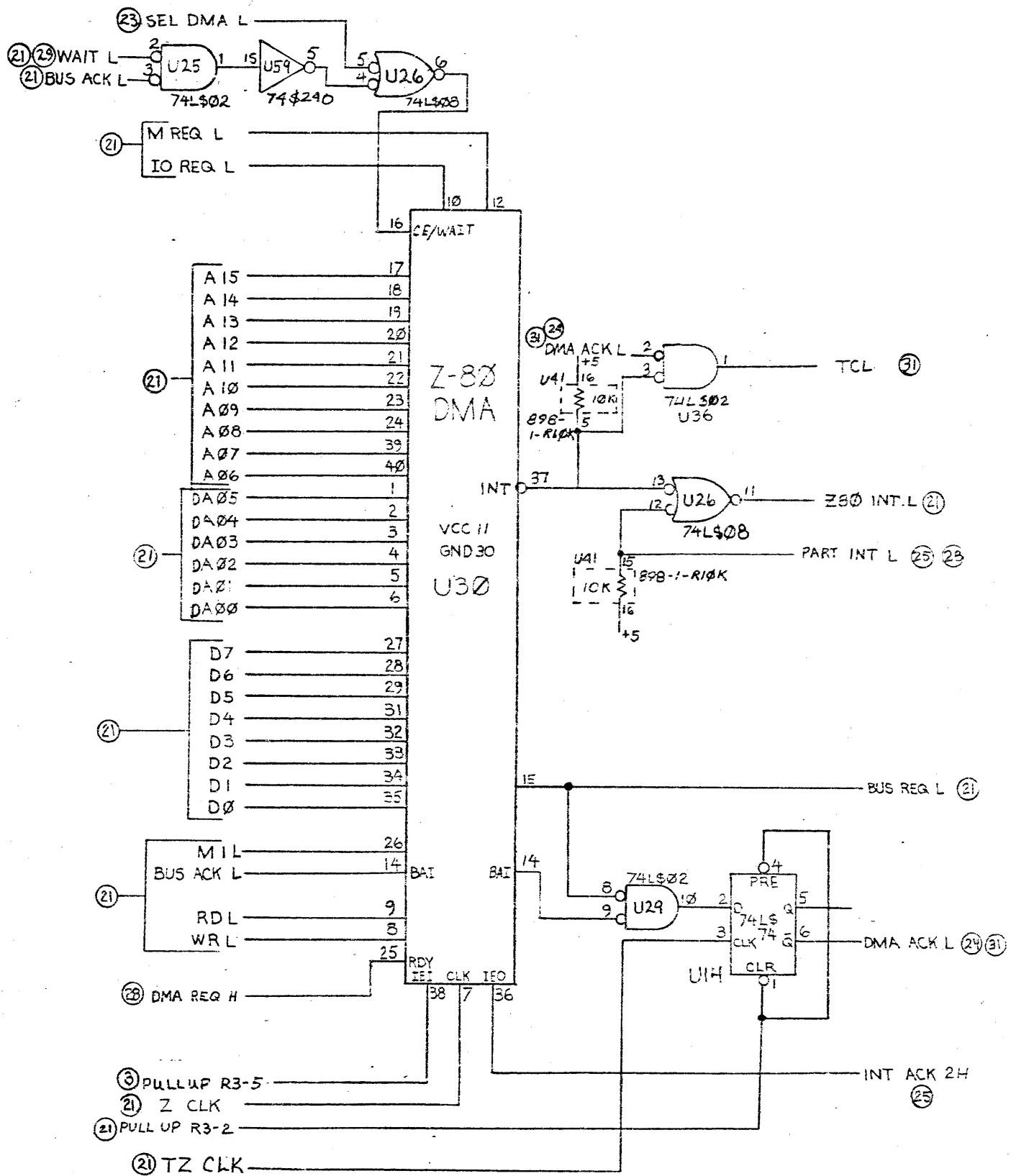


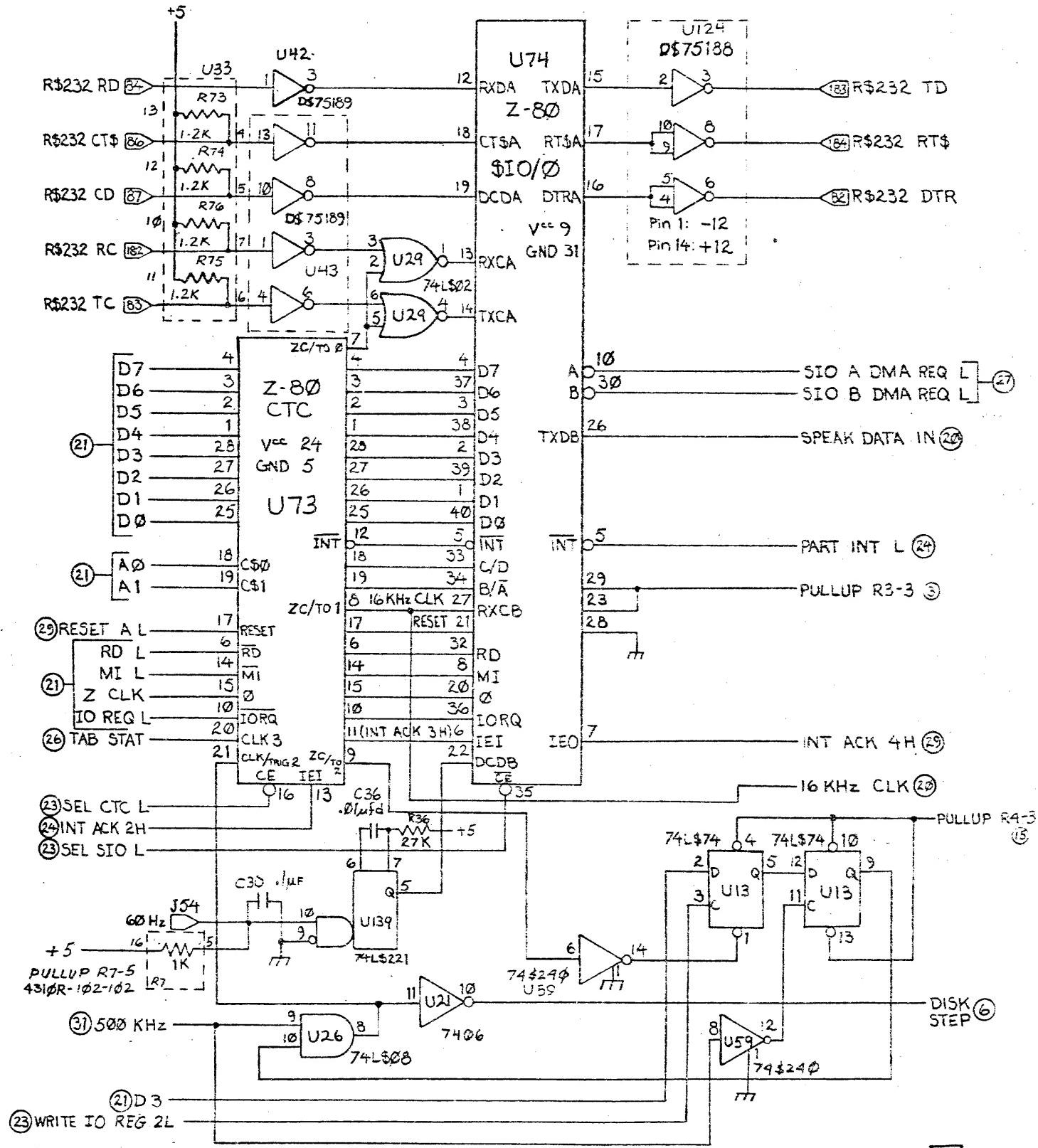
EPROM DIFFERENCES

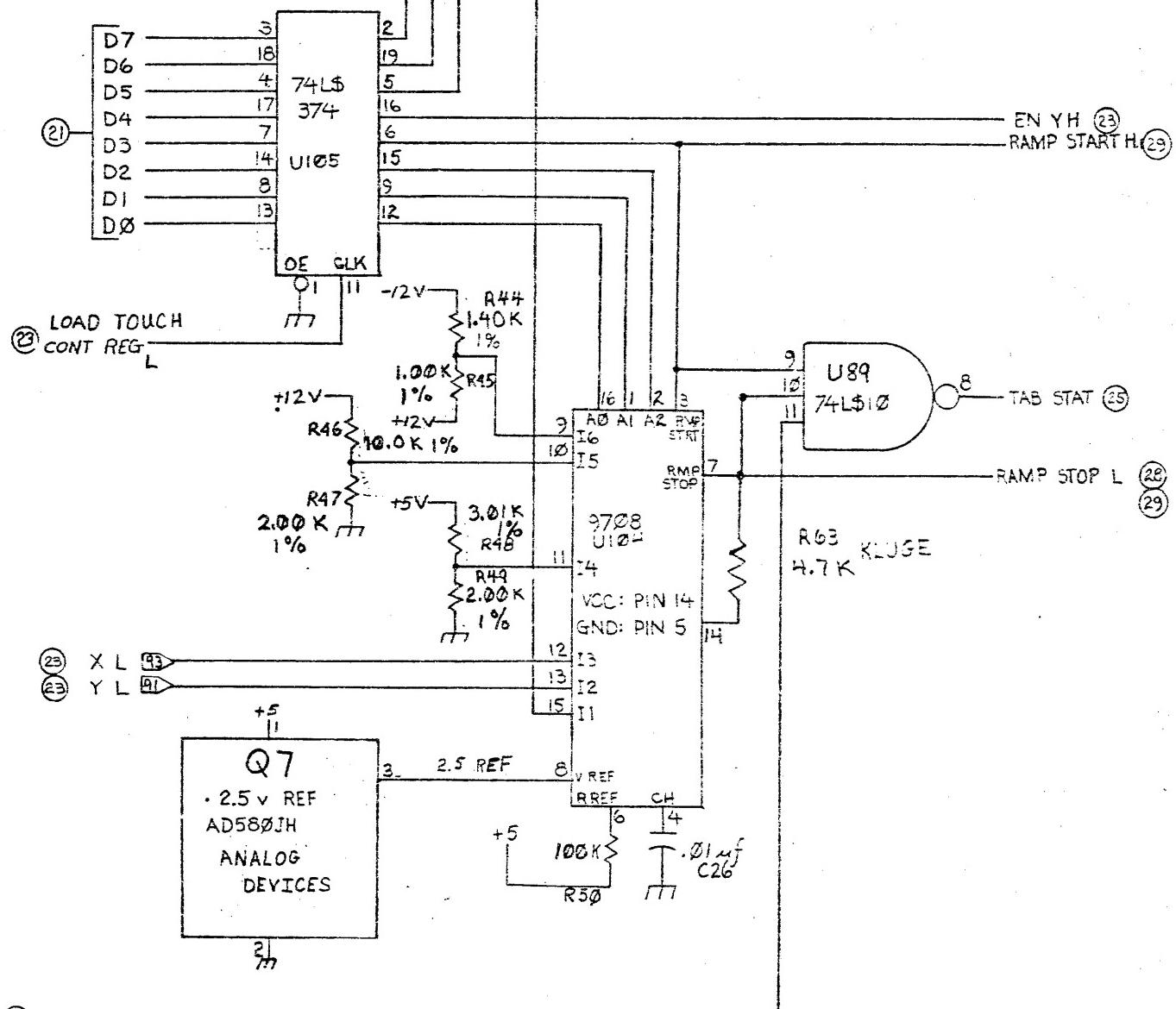
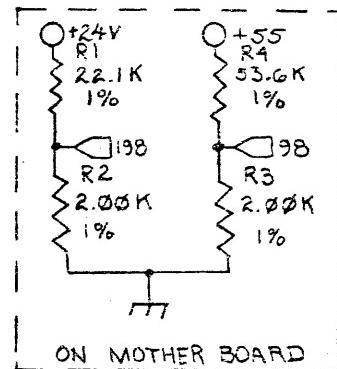
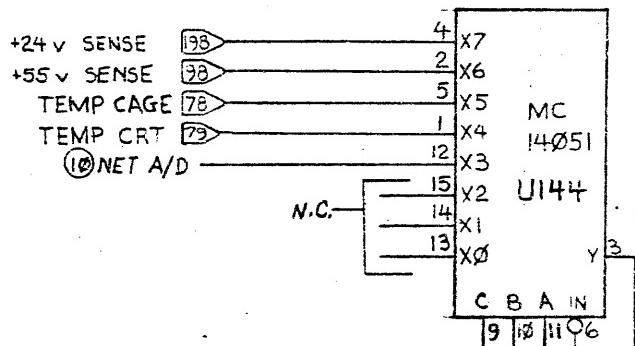
T I	INTEL
21	+5
20	CE
18	A11
	O Enb
	Chip Enb

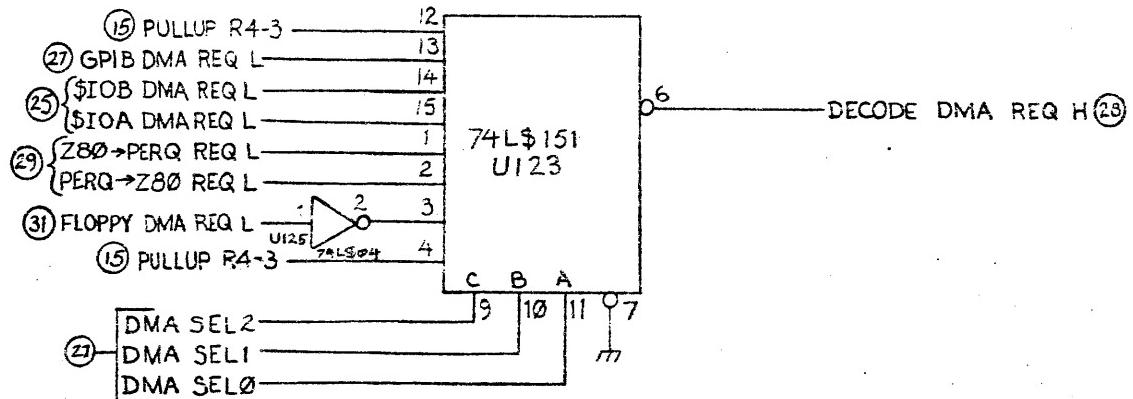


	Three Rivers Computer
TO PERIPHERAL DECODE	PRP-108-E
REV. #	PRP-SC-0457-C

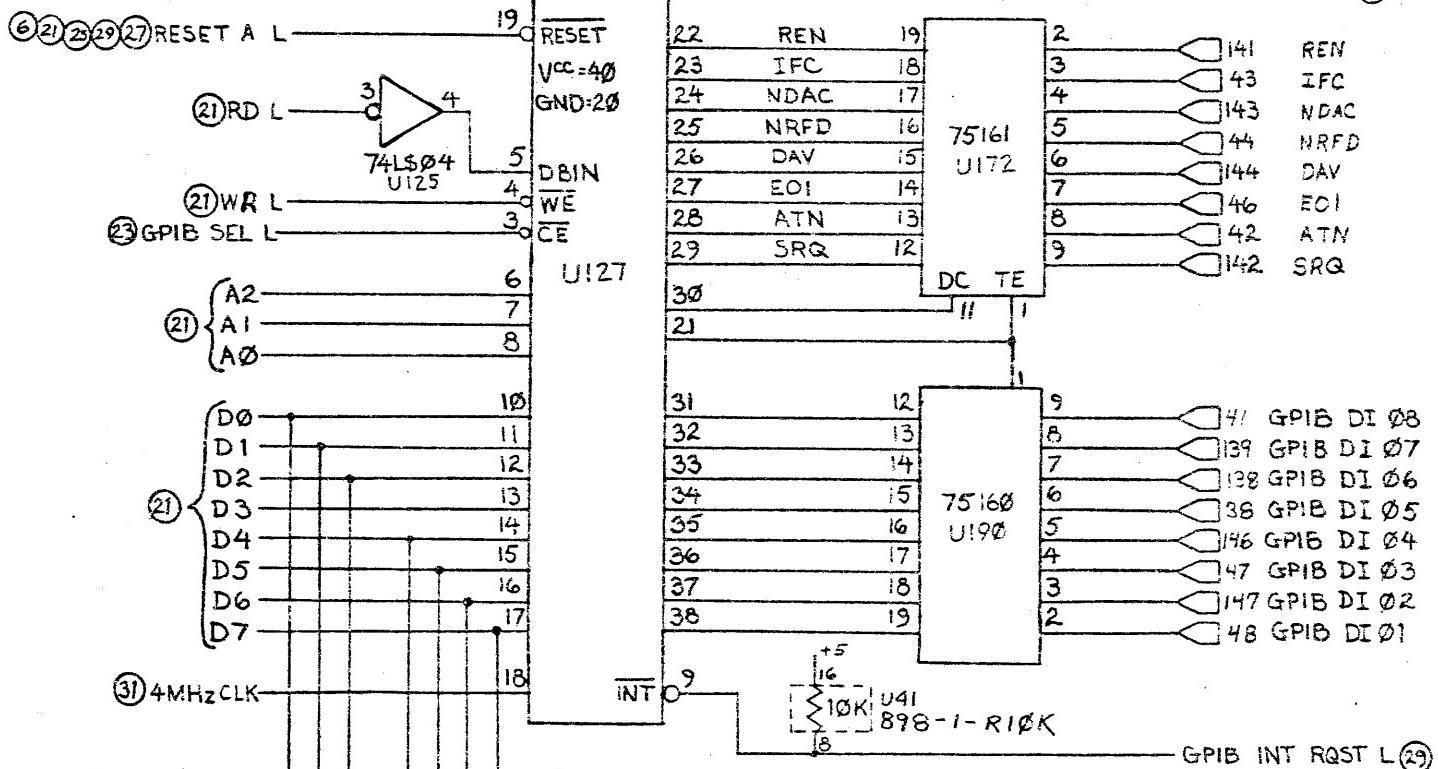




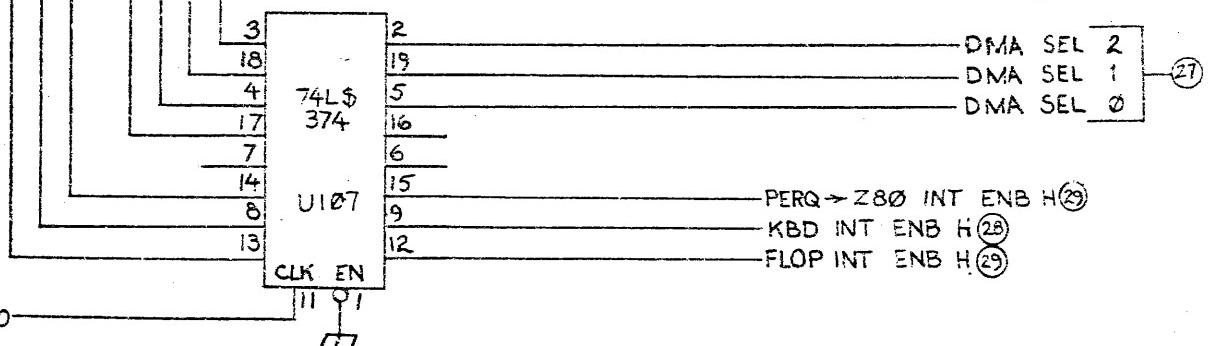




⑮ PULLUP R4-3 ————— 12
 ⑯ GPIB DMA REQ L ————— 13
 ⑰ \$IOB DMA REQ L ————— 14
 ⑱ \$IOA DMA REQ L ————— 15
 ⑲ { Z80 → PERQ REQ L ————— 1
 ⑳ { PERQ → Z80 REQ L ————— 2
 ㉑ FLOPPY DMA REQ L ————— 3
 ㉒ PULLUP R4-3 ————— 4
 ㉓ DMA SEL₂ ————— 9
 ㉔ DMA SEL₁ ————— 10
 ㉕ DMA SEL₀ ————— 11
 ㉖ DECODE DMA REQ H ㉗



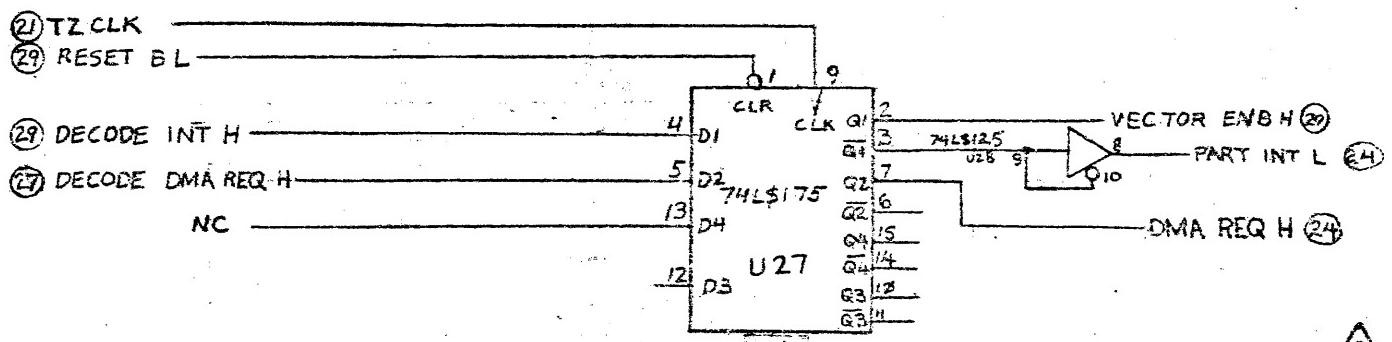
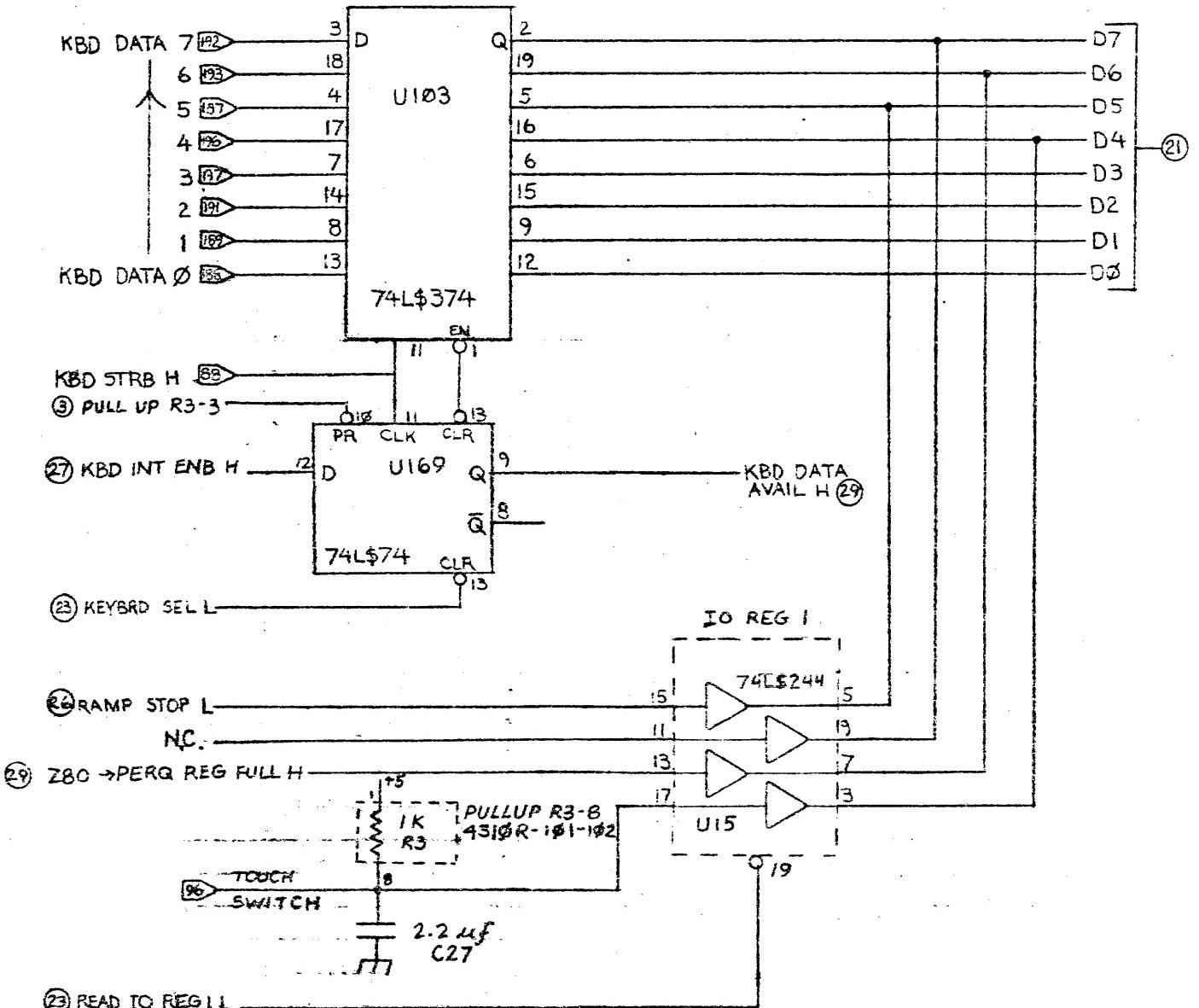
GPIB DMA REQ L ㉗



DMA SEL 2
 DMA SEL 1
 DMA SEL 0

PERQ → Z80 INT ENB H ㉙
 KBD INT ENB H ㉘
 FLOP INT ENB H ㉙

㉚ WRITE IO
 REG 3L



②1 PULL IP R3-2

DECODE INT H ②5

②7 PERQ → Z80 INT ENB H

②8 FLOP INT ENB H

②9 RAMP START H

②10 GPIB INT RQST L

②11 FLOP INT REQ H

②12 KBD DATA AVAIL H

②13 RAMP STOP L

②14 PERQ → Z80 REQ H

②15 CLK CLR

②16 TZ CLK

②17 VECTOR ENB H

②18 INT ACK H

②19 INT ACK A H

②20 TZ CLK

②21 TZ CLK

②22 TZ CLK

②23 TZ CLK

②24 TZ CLK

②25 TZ CLK

②26 TZ CLK

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②266 TZ CLK

②267 TZ CLK

②268 TZ CLK

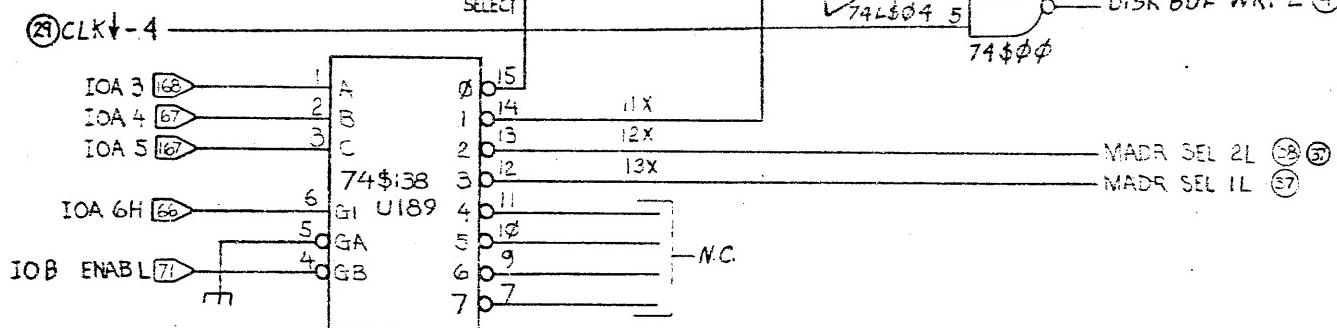
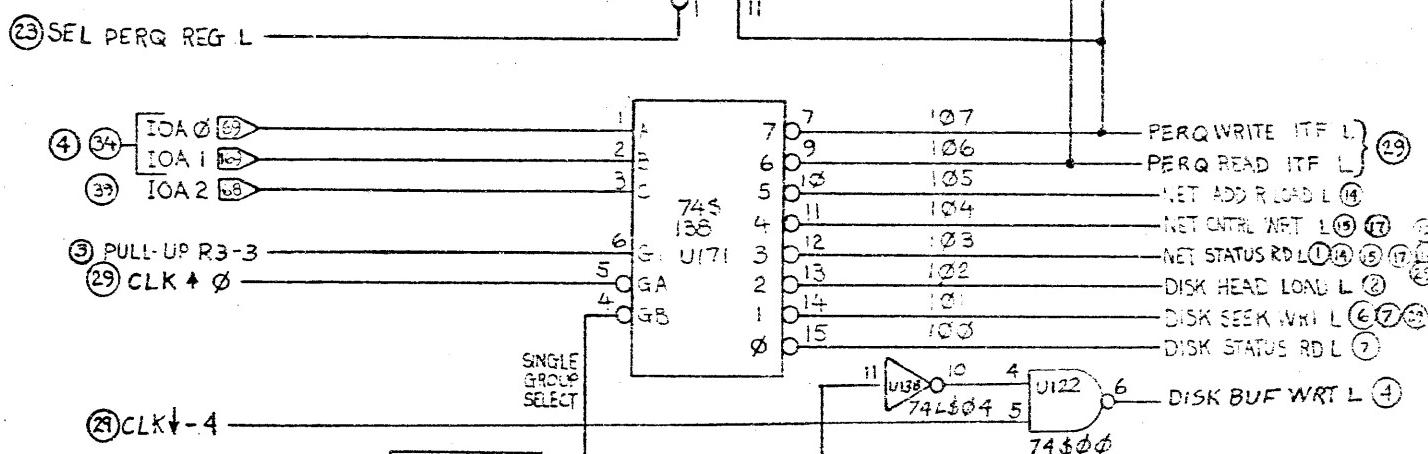
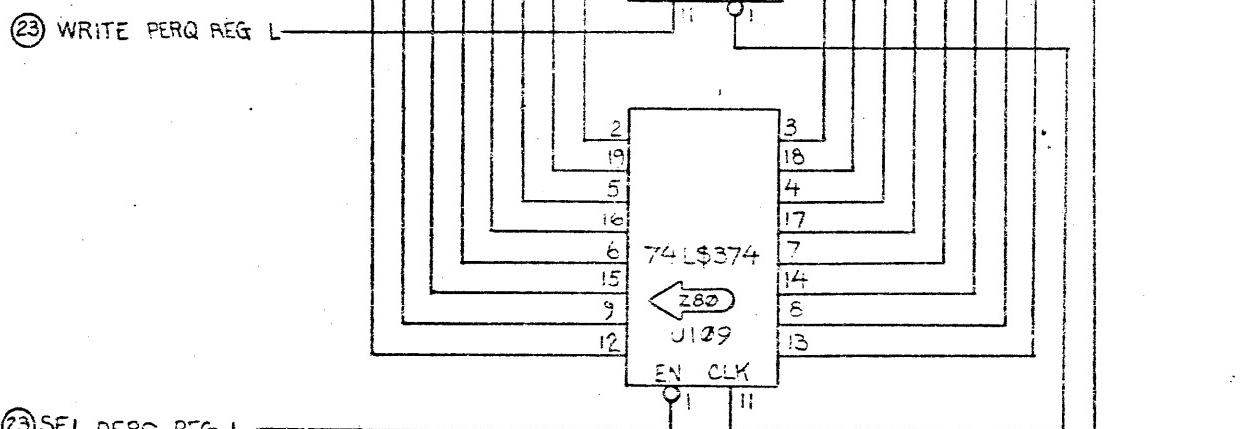
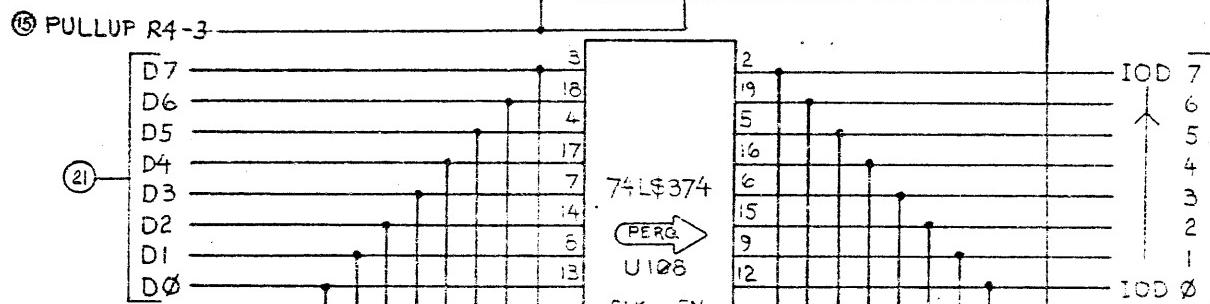
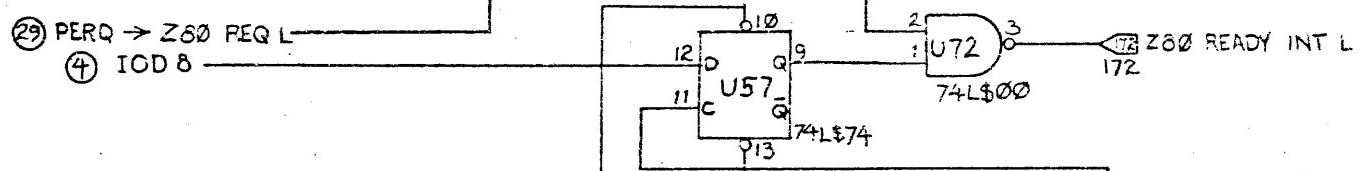
②269 TZ CLK

②270 TZ CLK

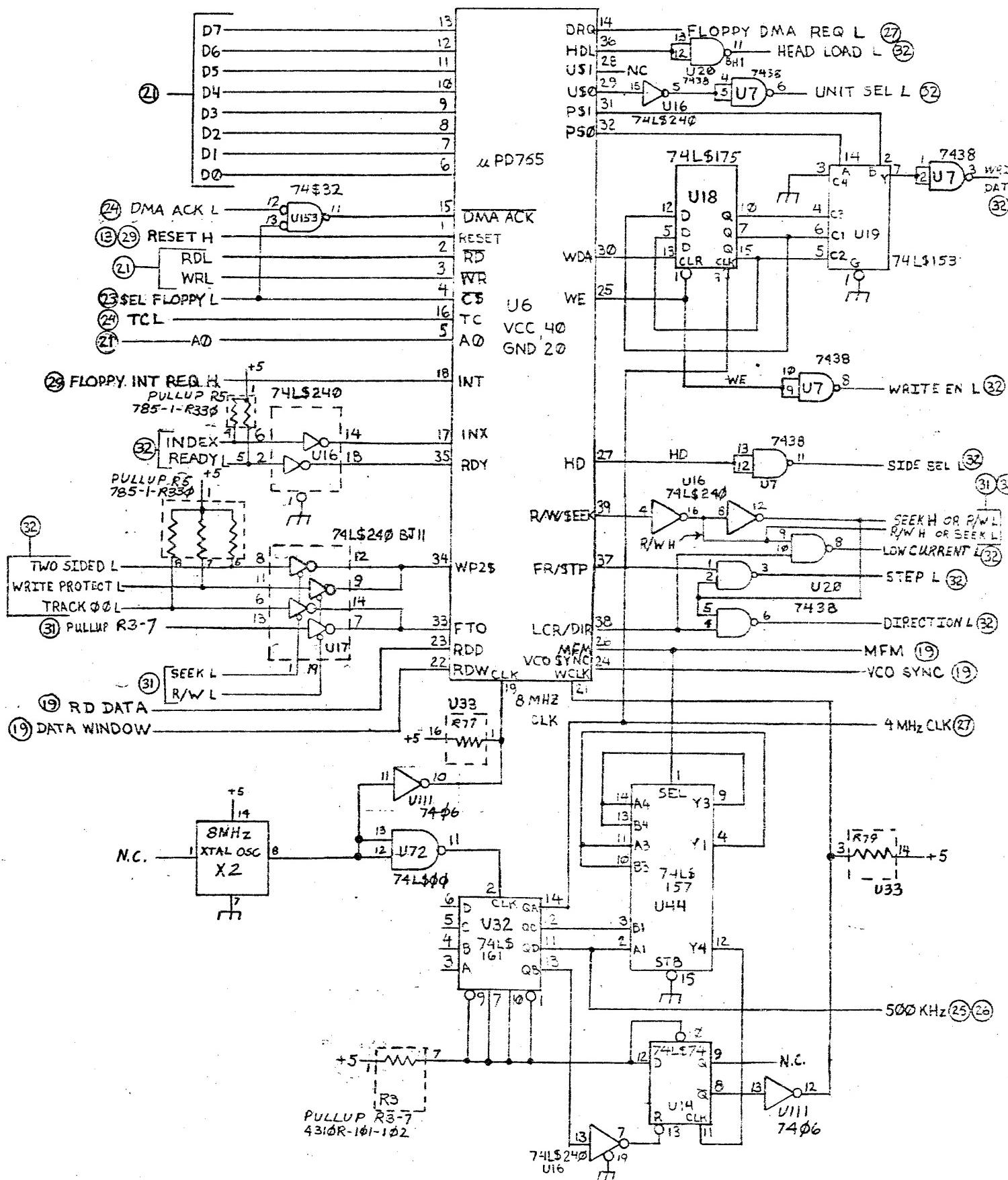
②271 TZ CLK

②272 TZ CLK

②273 TZ CLK



I/O ADDRESS FIELD DECODING	
I/O ADR (e)	ADDRESSED FUNCTION
<100 : 107>	SINGLE GROUP SELECTION
<110 : 117>	DISK BUFF WRITE
<120 : 127>	MADR SEL 1
<130 : 137>	MADR SEL 2



JA

PLL KLUGE

